

# THE IRON AGE

New York, February 12, 1925

ESTABLISHED 1855

VOL. 115, No. 7

## Making Steel Castings Stronger

Effect of Nickel, Chromium and Other Alloys in the Heat-Treated Product—Application in Railroad, Mining, Rolling Mill and Motor Fields

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**L**OWER costs and better product are of chief concern in the manufacturing field at any time and particularly now under the present competitive commercial conditions. On this account the users of castings have been watching with interest the relatively recent developments by which stronger and

erties. However, it was not until early in this century that commercial alloy castings were obtainable, largely through the demand of the government departments which specified their use. About 1910 the demand had grown sufficiently to warrant attention and, of course, the war increased the tonnage of alloy steel castings



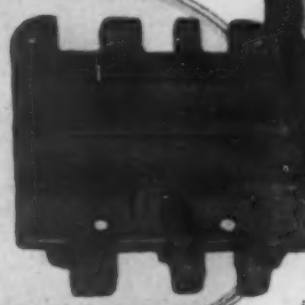
Sprocket for Coal Mining Machine. (Above) Cast 2.50 per cent nickel steel, case-hardened after machining. Sivy Steel Casting Co. photograph



Link for Coal Mining Machine. (Left) This link, which carries the cutting tool across the face of the coal seam, is cast from 2.50 per cent nickel steel and case-hardened. Sivy Steel Casting Co. photograph



Tractor Shoes. (Right) Cast nickel chrome steel. Carbon 0.35, nickel 1.25, chromium 0.60 per cent. Heat-treated to give an ultimate tensile strength of 125,000 lb. per sq. in.



Oil Well Reamer. (Above) Heat-treated nickel chrome steel casting; nickel 1.50, carbon 0.40, chromium 0.60 per cent. Sivy Steel Casting Co. photograph



tougher castings can be obtained at the same or a slightly lower price.

It has been a matter of common knowledge for a long time that the ordinary steel casting, while superior to one of iron, leaves much to be desired. It is relatively weak and has low shock and fatigue resistance. These conditions are bettered somewhat by annealing and still more by a regular heat treatment, but the best results of all are obtained with a heat-treated casting of alloy steel.

In the strict sense of the word, the first alloy steel castings were probably made soon after the production of the first steel casting when, either by accident or design, the usual deoxidizing addition of manganese was increased until it conferred new prop-

erties. At present they fill a definite need and are firmly established. For such castings recourse is had principally to nickel and chromium as the alloying elements, although vanadium and, to a lesser extent, molybdenum also are used.

Nickel, the oldest and most widely used, has practically the same effect on steel castings that it has on the forged and rolled forms. It principally strengthens and toughens the steel, rendering it resistant to both fatigue and shock, and to a lesser degree hardens the metal and emphasizes the good effects of the additional alloying elements. For the latter reason it is most frequently used in combination with chromium. In addition, the effect of nickel in reducing the grain size and also the tendency toward segregation are especially valuable in castings.

Chromium alone chiefly tends to harden the steel

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and at the same time slightly embrittles it. In combination with nickel each complements and emphasizes the other, so that great strength and toughness with higher hardness are obtained in conjunction with excellent shock and fatigue-resisting qualities. The response to heat treatment is ready and marked, which adds to its useful qualities and, when occasion demands, it lends itself to carburizing process almost as well as the plain nickel steel, whose case-hardening properties are unapproachable. From long experience it has been determined that the proportion of nickel to chrome should be about 2 to 2½ of nickel to 1 of chromium to get the best results.

Nickel-chrome steel, all things duly considered, is probably the best commercial alloy steel for castings today. There are other alloy steels, including straight nickel, which answer a specific purpose better or which can be made to give higher tensile strength, but it will usually be found that nickel-chrome will perform equally as well as any other steel and at less cost. Occasionally small amounts of vanadium or molybdenum will be added to this combination in order to obtain peculiar properties for a particular purpose, but this is the exception rather than the rule.

Manganese is another element conferring special properties on steel which merits more attention than it has had. High manganese steel is, of course, well known and has a very definite field, but in the lower contents manganese has been the Cinderella of the alloys, often bearing the brunt of the work and getting no credit. Up to 1.00 or 1.50 per cent, manganese acts to strengthen and harden steel. In combination with nickel there results a cheap steel with excellent properties for castings which is comparatively unknown at present.

Aside from these there are no other alloy steels containing nickel, having a wide use. The combination of nickel and molybdenum in rolled and forged steels is well-known and becoming increasingly popular but as yet has not been developed in the casting field. Nickel vanadium combinations are not used to any extent, but Giolitti suggests that vanadium may have a tendency to refine the grain of castings, due to its effect on increasing the number of crystallization nuclei.

The types thus briefly outlined usually are obtainable in the following analysis ranges:

	Three Per Cent Nickel	Nickel- Chrome	Nickel- Manganese
Carbon .....	As desired	As desired	As desired
Manganese .....	0.40—0.70	0.40—0.70	0.75—1.25
Silicon .....	0.15—0.40	0.15—0.40	0.15—0.40
Phosphorus .....	Below 0.05	Below 0.05	Below 0.05
Sulphur .....	Below 0.05	Below 0.05	Below 0.05
Nickel .....	2.50—3.50	1.50—2.50	1.25—1.75
Chromium .....		0.50—1.25	

These analyses are intended only as a rough guide; they vary in accordance with the kind of service for which a casting is intended. This is particularly true of the carbon content, which usually ranges from 0.30 to 0.40 per cent. Where great strength or hardness is required the carbon will be higher; where ductility and toughness are the main considerations it may go lower.

As to the cost of alloy steel castings it should be pointed out that the quoted prices are not fair indices. It is the economical cost which matters. The problem of figuring the actual cost in dollars and cents, as well as damage to reputation and loss of good will, which results from failure of a defective casting, is difficult. It is equally hard to arrive at figures representing actual financial loss resulting from excess and useless weight. Today the tendency is all toward eliminating the risky, bulky casting and substituting for it a strong, tough and shock-resisting one that constitutes no dead weight.

It is axiomatic that to prove its commercial superiority an article may be cheaper in price and give equal or better service, or it may be equal in price and give better service or, finally, it must give exceptional performance at only a moderate advance in price. How do the alloy castings measure up to this yardstick? Nickel and nickel-chrome steels are so much stronger than ordinary carbon steels that for the great majority of purposes a casting only 60 per cent as heavy in the stressed parts will be necessary. Under such

circumstances a very conservative estimate of the eventual saving in cost would be 10 per cent, taking into account the increased cost of the steel and its heat treatment. In addition there are economies which are not apparent on the surface. Among these are the saving in freight to and from the customer's plant and the eventual difference in the scrap value of the two castings.

It is easy for the prospective purchaser to estimate the approximate price asked by the steel foundries for these castings as there is a practically standard scale of extras to be applied to the price of carbon steel castings in order to obtain the price of the same casting in alloy steels. These differentials (October, 1924) are:

For 3 per cent Nickel.....	2.75c. per lb.
Nickel-chrome .....	2.50c. per lb.
Nickel-manganese .....	2.00c. per lb.

and for comparison,

1 per cent Chromium.....	1.00c. per lb.
0.18 Vanadium .....	2.80c. per lb.
Chrome-vanadium .....	3.80c. per lb.

To give a typical case, a cast low-carbon steel gear weighing 75 lb. cost 10c per lb. Made of nickel-chrome steel the cost per pound was 12½c, an increase of 25 per cent for a product at least twice as strong. Cases where straight carbon castings bring 15c per lb. are not infrequent; for example, bridge castings. It is evident that in such cases the disparity in price between straight carbon and alloy castings is even less marked.

As outlined before, the use of nickel and nickel-chrome steel castings owed their source many years ago to manganese steel castings. Their actual development and increase in their use, however, arose from observation of the qualities conferred on rolled and forged steel by these elements and a desire to obtain a corresponding benefit in steel casting work. Originally confined to narrow fields, their growth has become more and more rapid and their uses more and more extended.

It seems astonishing that heat-treated alloy castings are today invading the forging field but, revolutionary as the statement may seem, a good sound alloy casting is often superior to a forging, particularly when the forging operation has been carried out so that the flow lines of the forgings tend to develop planes of weakness. Dr. Giolitti in his interesting book cites several cases of heat-treated 2 per cent nickel steel castings satisfactorily replacing intricate and expensive forgings in the war material of the Italian Army¹.

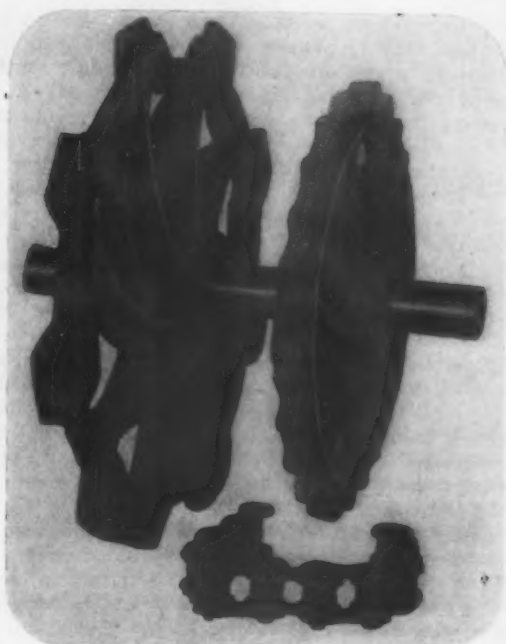
This surprising ability of these castings to replace a presumably much finer article has perhaps been responsible for their introduction into the automotive field, where such parts as axle housings, differential spiders, spring hangers, brackets and small stressed parts are frequently cast alloy steel. Although stiffness rather than strength is the controlling factor in influencing the material for connecting rods and front axles, alloy castings have been used for each.

Tractors and agricultural machines employ them to a greater extent. Here they are found as tractor shoes, drive sprockets, track chains and track parts. One manufacturer of tractor shoes using a nickel-chrome steel, analyzing carbon 0.35; nickel 1.00, and chromium 0.60 per cent, reports that after an air quench and draw the elastic limit is 98,000 lb. per sq. in., ultimate tensile strength 125,000 lb. per sq. in., elongation 16.5 per cent and reduction of area 38 per cent, with a Brinell hardness of 222. This shoe furnishes a good example of the effect of thin sections in heat treatment.

In other transportation fields the prospect for additional uses of nickel steel castings seems bright. The increase in weight and power of the modern locomotive has resulted in a corresponding increase in the use of cast alloy steel frames, the majority being made of vanadium steel. Nickel steel of the same carbon and manganese content can equal or excel a carbon-vanadium steel. Consideration of an elastic limit of 60,000 lb. per sq. in., ultimate tensile strength of 98,000 lb. per sq. in. and an elongation and reduction of area of 21 per cent and 35 per cent respectively ob-

¹ "Heat Treatment of Soft and Medium Steels." F. Giolitti, page 242 et seq., McGraw-Hill Book Co., 1921.





Cast Tractor Sprockets. Heat-treated nickel chrome steel. Monarch Tractor Co. photograph

tained in the annealed state from a 0.33 per cent carbon, 3.50 per cent nickel steel will indicate the possibilities of this steel with a higher carbon content and improved heat treatment. A modern locomotive may have as much as 50 tons of castings used in its construction, a fruitful field for further development.

Turning from locomotive frames to another phase of railroad work, cast nickel-chrome steel has been successfully used to fill the trying demands of railroad switch frogs and crossovers, where the wear and constant repetition of pounding wheels try any steel. The Milwaukee Electric Railway & Light Co. pioneered in the use of this material and recently published the results<sup>2</sup>.

From an 0.49 per cent carbon, 2.86 per cent nickel, 0.84 per cent chrome steel, heat treated by air quench and draw, the average elastic limit was 66,950 lb. per sq. in., ultimate tensile strength 107,290 lb. per sq. in., elongation 16.6 per cent and reduction of area 26.4 per cent, with a Brinell hardness of 219.

Manganese steel of the Hadfield analysis stands

<sup>2</sup>Chrome Nickel Steel in Special Trackwork. F. G. Hibbard, *Electric Railway Journal*, March 17, 1923.



Shovel Dies. Heat-treated high-carbon nickel-chrome cast steel. Pittsburgh Iron & Steel Foundries photograph

alone in respect to hardness and resistance to wear but it is well known that its best wearing qualities are developed only where there is a peening action, such as in track work and ball mills. Occasionally when abrasion only is to be dealt with, especially at high speeds, as in parts for grinding mills and centrifugal pumps lifting water that carries sand, other material is better. For example, cast nickel-chrome steel is now used for rolls and sleeves in copper and milling machines in place of manganese steel. Similarly, a high-carbon nickel-chrome casting was used successfully for a crusher jaw, a peculiarity being that the face of this jaw was case hardened to render it almost glass hard.

A casting used for resistance to wear—in this case a gas producer ash shovel—analyzed 0.70 per cent carbon, 1.33 per cent nickel and 1.33 per cent chromium, which gave an elastic limit of 153,000 lb. per sq. in., ultimate tensile strength of 163,000 lb. per sq. in., and elongation of 10 per cent and a reduction of area of 12 per cent, the ductility and toughness being sacrificed to obtain the hardness necessary, which ran about 500 Brinell.

A similar use is in the coal mining machines which carry a chain on which are fixed the actual cutting tools. These chains and the sprockets on which they run are subjected not only to high stresses, but to excessive wear from the coal and slate. For this reason they are now made of 2.50 per cent nickel steel case hardened.

High manganese steel has another disadvantage in that it cannot be machined but must be ground to

Valve Casting for High Pressures and Temperatures. Heat-treated nickel-chrome steel. At 750 deg. Fahr. tensile strength 83,300 lb. per sq. in., elastic limit 67,400 lb. per sq. in., elongation 23 per cent, reduction of area 49 per cent



shape where a close finish is required. In many cases this makes it more economical to cast the article from a nickel-chrome or similar steel which can be machined quite easily when annealed and yet has the necessary strength and hardness to do the work.

Some experimental work recently accomplished has indicated the possibility of adding a relatively high percentage of nickel to the so-called Hadfield manganese steel and in this manner rendering it both forgeable and machinable, yet retaining to a great extent the valuable wear-resisting qualities. While the details of this work have not been made public, some measure of success must have been attained, as commercial quantities are now being made.

The trend toward higher steam pressures and higher degrees of superheat in the production of power has greatly increased the demand made upon power house equipment. At least one large power house is using a maximum pressure of 1200 lb. per sq. in., but pipe fittings and valves employing alloy steel castings are well able to meet the requirements. One of the leading valve manufacturers uses electric furnace nickel-chrome steel with great success and finds that the tensile properties of this metal at the temperatures of superheated steam hold up remarkably well. At 750 deg. Fahr. the elastic limit of 67,000 lb. per sq. in., ultimate tensile strength 83,000 lb. per sq. in., elongation 23 per cent and reduction of area 49 per cent show that this steel is well over twice as strong at this temperature as ordinary carbon steel castings.

The resistance to corrosion and erosion was also markedly superior to that of the usual steel<sup>3</sup>.

A valve of this sort is peculiarly fitted for use in the oil refineries where the high temperatures and pressures used, together with the disastrous consequences attending a leak, make it imperative to use a strong, tight valve. Pressures as high as 800 lb. per sq. in. and temperatures of 1000 deg. Fahr. are occasionally encountered, but at 1000 deg. Fahr. the elastic limit of this steel is still over 50,000 lb. per sq. in. although the steel is at a red heat.

Power generation involves the use of large frames, bed plates, etc. As a rule, the requirements of rigidity are so great that the stresses run very low, perhaps only 10,000 lb. or so to the square inch, so that a simple carbon steel or even iron casting is amply strong. On the other hand in the transmission of power large numbers of gears and pinions are used where it is economical to use a cast alloy steel gear in place of the much more expensive forged and cut gear. The manufacture of such a gear entails so large an amount of machine work that the gear cast to approximate shape and only requiring a finishing cut makes a strong appeal.

Cast chrome steel because of its low cost is often used for this class of work and gives very good results, but where toughness is an essential the contrast is greatly in favor of the nickel or nickel-chrome castings. If any shock or fatigue condition is to be met the latter steels are better. Heat-treated, such a gear will have long life and be comparable to the forged gear for strength, yet the cost will be considerably lower. It is for these reasons that the promise of greatest development in the use of alloy steel castings seems to be for gears, pinions and racks.

Steam shovels and dredges use such castings to a large extent as well as for bucket lips and teeth. Another important use is for pinions and coupling

<sup>3</sup>Steel for Higher Pressures and Elevated Temperatures. V. T. Malcolm, *Power*, June 24, 1924.

boxes for rolling mills. These parts transmit the power to both the upper and lower rolls and so are subject to great pressures and enormous shock, as anyone realizes who has seen (and heard) a large blooming mill reverse itself in full stride, so to speak.

The steel mills were among the pioneers in the use of alloy steel castings in their search for some metal which would outwear the iron or steel rolls then in use. Most modern alloy steel rolls are either 3 per cent nickel or nickel-chrome, both of which have been proved strong enough to resist the pressures used and hard enough to outwear the ordinary roll. The heat treatment invariably has been a simple anneal but it is realized now that increased benefits may result from a modified treatment that approaches the quench and draw. While not strictly speaking a steel roll, notice should be taken of the rolls sold under a trade name which are cast from what might be described as a nickel-chrome semi-steel. The continued success of these rolls under sharp competition testifies to their worth.

There are a few other uses which merit some mention among them being the heat-treated cast nickel-chrome die block with the impression cast in, so that it only requires a finishing cut to be put in service, the use of cast nickel-chrome steel shear blades and trimming dies for automobile crankshafts, cast nickel-chrome steel tools for drilling oil wells which give three times the usual wear, and the cast nickel-chrome steel car wheel used by one traction line. The Army and Navy also, which pioneered in the development of these castings and which have made great advances with them, have not stood still and recently the ordnance department of the Army at the Watertown Arsenal has been doing very valuable work in the X-ray examination of steel castings which apply with added force to alloy steel castings<sup>4</sup>.

<sup>4</sup>"X-Ray Tests Applied to Problems of the Steel Foundry," H. H. Lester, *Transactions, A. S. S. T.*, November, 1924.

(To be concluded)

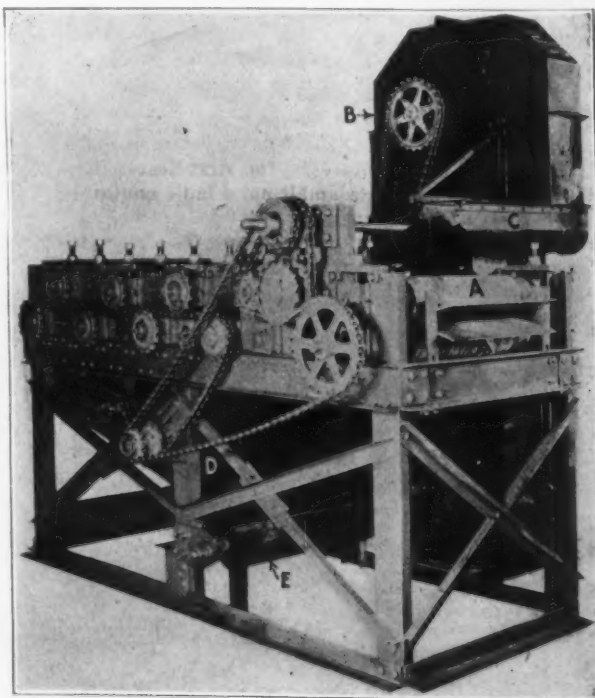
### Cleaning Machine for Strip Steel

A strip steel cleaning machine for removing oil and dust from cold rolled strip steel before annealing, shown in the illustration, has been brought out by the Broden Construction Co., 1265 East Fifty-fifth Street, Cleveland. It is pointed out that oil that accumulates on the strip steel during cold rolling is detrimental to bright annealing and should be removed as far as possible, this being particularly true if the oil is dirty, so that it will cause a discoloration of the finished product. Those manufacturers who wipe the steel off by hand are declared to be using a slow and expensive cleaning method. With this machine the strip is cleaned mechanically by means of cotton rolls and chaff or bran and it is stated that work is done much more efficiently than can be done by hand.

The machine consists of feed rolls, a series of cotton buffing rolls, 6 in. in diameter, and a circulating system for the cleaning material, all mounted on a structural steel frame. The strip enters the feed rolls, which pass the material through the machine between the cotton rolls at a constant speed of approximately 90 ft. per min. Two speeds are provided for the cotton buffing rolls, one half operating at 150 r.p.m. and the alternate rolls at 100 r.p.m., to provide a polishing effect on the steel. The chain drive shown in the picture drives one half of the rolls and the alternate rolls have a similar drive on the opposite side. As the strip passes through the machine the buffing rolls clean both sides, removing the oil and giving the material luster, which is an advantage in the annealing process, especially when bright annealing is required.

To prevent the cotton rolls from becoming oil soaked the chaff, fed onto the rolls, absorbs the oil from the strip as it passes through the machine. The chaff is kept in circulation by means of a bucket elevator and screw conveyors. It drops from the elevator B onto a screw conveyor that feeds it into the machine. From the buffing rolls the chaff drops to the hopper D, at the

bottom of which is another screw conveyor E that delivers it back to the bucket elevator, which carries it up for delivery to the first screw conveyor, thus completing



Buffing Rolls Clean Both Sides of Strip Steel Passing Through, While Chaff Is Fed In to Absorb the Oil

the circuit. As the chaff becomes oil soaked and dirty, new chaff is added.

The machine is driven by a 7½-hp. constant speed motor located on the elevator side.



# Soda Ash as Desulphurizer in Foundry

Large Manufacturer of Chilled Iron Car Wheels Has Made Desulphurization Standard Practice in All of Its Plants for Over a Year—Incidentally, This Conserves Manganese

FOR over a year the use of soda ash as a desulphurizer has been standard practice in all of the foundries of the Griffin Wheel Co., manufacturer of chilled iron car wheels, with headquarters at Chicago. Formerly the only method of materially lowering sulphur content in the mixture was to use more pig iron and to reduce the proportion of old wheels and scrap. Through the use of sodium carbonate as a desulphurizer it is now possible to procure raw materials without reference to sulphur content, thus allowing wider latitude in the purchase of pig iron, scrap and returned wheels. In fact, the company is now entirely free to use such proportions of the three classes of material as commercial conditions dictate.

Necessity for a successful method of desulphurizing the cupola mixture was brought to a focus by recommendations of the wheel committee of the American Railway Association, calling for a progressive reduction in the sulphur content in wheels during the years 1923 to 1928. These recommendations fixed the minimum allowable sulphur content in wheels as follows:

1923-1924.....	0.17 per cent	1927-1928.....	0.15 per cent
1925-1926.....	0.16 per cent	1929 and after..	0.14 per cent

Although car wheel manufacturers by no means believed it demonstrated that further sharp reductions in sulphur content would necessarily influence the serviceability of wheels, they accepted the specifications proposed by the railroad body. It is not surprising, therefore, that makers of car wheels gave much thought to ways and means of meeting the new requirements. The innovation in cupola practice at the Griffin Wheel Co. plants followed experiments conducted by Frederick K. Vial, chief engineer, after a trip abroad, where he met Richard Walter, head of the Walter Metallurgical Co., Duesseldorf, Germany, who had developed a compound for desulphurizing cast iron while in the molten state.

## Experiments with Imported Reagent

Mr. Vial arranged for the shipment of a metric ton of the Walter compound, which was received in Chicago in December, 1922. The material was in the form of one-pound briquettes. The first test with this material was made in a small hand ladle containing 25 lb. of iron. The chemical action caused boiling and required from 5 to 10 min. for the reaction to become complete. The small quantity of iron by that time was cooled to such an extent as not to be representative of the character of iron that might be produced on a larger scale. It was found, however, that upward of 40 per cent of the sulphur was readily removable.

Next the treatment was tried in a wheel ladle, which was more successful, although the time required for the reaction to take place precluded its regular use in wheel ladles. It was necessary to hold each ladle 10 min. to get the best results. The next move was to try using the material in a large reservoir or bull ladle. Several tests of this kind were used, extending in some instances over a full day's work. In all some 2000 wheels were treated, with very good results. The table indicates the amount of treatment, the sulphur in the untreated iron and also the amount of sulphur actually removed. A test bar was taken from every third tap, each tap representing 12 wheels.

Inspection of the table indicates that it is possible, with the correct application of the material, to remove one-third of the sulphur content from melted iron. The material was treated, each time the cupola was tapped, as near as possible to the amount specified in the table. The reaction of the material on the slag was very satisfactory. It has a low melting point and therefore remains very fluid. In the tests, the slag was not re-

moved from the large ladle. It was held all day, which probably accounts for the fact that, at the latter end of the heat, there was less sulphur removed from the iron than during the middle portion of the heat. This apparently was on account of the heavily charged sulphur slag that floated on the iron.

The large ladle was of the teapot type and the small ladles were bottom pouring. The foundrymen

## Addition of Walter Compound to Bull Ladle

A—1 Lb. per Wheel or 0.125 Per Cent Addition to High-Sulphur Mixture

Bar No.	1	2	3	4	5	6	7**	8	9
Sulphur	0.198	0.174	0.131	0.127	0.134	0.161	0.141	0.151	0.154
Silicon	0.68	0.68	...	0.62	0.64	...	0.64	...	0.65
Manganese	0.62	0.73	0.56	0.55	0.64	0.71	0.73	0.83	0.78
Comb. carbon	0.84	0.78	...	0.107	...	0.96	0.82	0.77	0.84
Chill on test piece	1.50	1.45	1.45	1.50	1.45	1.60	1.50	1.50	1.55

## A-1—Low-Sulphur Mixture

Bar No.	1	2	3	4	5	6	7	8	9
Sulphur	0.146	0.132	0.131	0.120	0.119	0.099	0.103	0.101	0.108
Silicon	0.65	0.64	0.59	0.58	0.54	0.60	0.57	0.61	0.57
Manganese	0.65	0.65	0.70	0.67	0.66	0.70	0.69	0.70	0.67
Comb. carbon	0.69	0.69	0.71	0.68	0.69	0.66	0.65	0.63	0.66
Chill on test piece	1.40	1.65	1.55	1.60	1.55	1.50	1.35	1.40	1.35

## B-2 Lb. per Wheel—0.25 Per Cent Addition

Bar No.	1	2	3	4	5	6	7	8**	9
Sulphur	0.173	0.145	0.124	0.119	0.121	0.126	0.137	0.122	0.149
Silicon	0.66	0.66	0.65	0.63	0.63	0.62	0.63	0.63	0.62
Manganese	0.61	0.65	0.68	0.67	0.66	0.60	0.62	0.60	0.61
Comb. carbon	0.80	0.73	0.76	0.75	0.76	0.74	0.78	0.74	0.77
Chill on test piece	1.45	1.40	1.50	1.55	1.45	1.45	1.20	1.30	1.35

## C—4 Lb. per Wheel—0.50 Per Cent Addition

Bar No.	1	2	3	4	5	6***	7	8	9
Sulphur				0.186		0.152	0.127	0.111	0.110
Silicon				0.64		0.63	0.53	0.50	0.51
Manganese				0.70		0.62	0.70	0.66	0.70
Comb. carbon				0.75		0.54	1.04	1.15	1.12
Chill on test piece				1.60		1.60	1.65	1.50	1.80

\*\*Treatment discontinued.

\*\*\*Treatment started on Bar No. 6.

seemed to notice that there was less slag in the small ladle than when the large ladle was treated with this material.

## Treatment Beneficial But Does Not Aid Strength

Aside from removing sulphur, the effect of the treatment is beneficial, for it acts as a cleanser and probably removes oxides, occluded slag, etc., giving a clear appearance to the fracture.

There is no evidence to indicate that the physical properties of cast iron are improved by lowering the sulphur content. It also is reported from the testing laboratories of Germany that they did not find any improvement in tensile strength accompanying the removal of sulphur. This is in accord with tests made in the Griffin laboratory. In connection with the experiments concerning desulphurizing of iron by the Walter method, two comparative tests were made, with the results shown in the table on the next page.

This table indicates that the metal treated with the smallest amount of desulphurizing material gave the largest increase in tensile strength, while the effect on sulphur was small. In the case of the heavier treatment there was no perceptible difference in the strength of the bars. Much further research into the strength of irons under various conditions will be necessary before any definite claim can be made for improvement in the iron.

Approximately 90 per cent of the compound was

found to be sodium carbonate and, from experiments conducted by Mr. Vial, it was found that a radical variation from the German formula produces just about as satisfactory results. In fact, sodium carbonate alone, when properly prepared, will produce the necessary reaction. At first it was attempted to use soda ash as found in commerce, without fusing beforehand, but the material was as fine as flour and flew about the

Comparison of Ultimate Tensile Strength of Untreated and Treated Iron, Using 0.125 and 0.25 Per Cent Additions of Walter Compound

	Un- treated	Treated with 0.125 Per Cent	Un- treated	Treated with 0.25 Per Cent	
Sulphur .....	0.160	0.154	0.173	0.144	per cent
Silicon .....	0.64	0.69	0.63	0.61	per cent
Manganese .....	0.64	0.67	0.62	0.65	per cent
Total carbon .....	3.47	3.33	3.46	3.46	per cent
Combined carbon .....	0.80	0.80	0.80	0.80	per cent
Phosphorus .....	0.329	0.337	0.294	0.290	per cent
Ultimate tensile strength per square inch	Bar 1 31,960	35,160	35,600	36,800	
	Bar 2 32,870	34,150	37,250	34,900	
	Bar 3 29,640	34,770		35,020	
Average .....	31,490	34,693	36,420	35,570	

foundries to such an extent as to become objectionable. A more satisfactory method is to mix the materials, melt them and pour into small molds of 1 or 2 lb. each.

#### Reaction and Saving of Manganese

In adopting the use of soda ash in its regular practice, the Griffin Wheel Co. adds the material in the spout rather than in the ladle. This is to facilitate the use of this method in connection with continuous tapping from the cupola. Part of the reaction continues to take place in the ladle, which is periodically tipped backward for skimming. Although the soda ash is fluid and stays on top of the bath, the amount of sulphur throughout the ladle is uniform, as evidenced by samples taken from bottom pouring ladles. This is apparently accounted for by the continuous circulation of the molten metal, due to the cooling of the portion of the mixture which is at the top and in contact with the atmosphere.

Dr. Walter recommended the use of 100 lb. of his compound per ton of iron, but the Griffin Wheel Co. has found that the use of 20 lb. per ton of metal is more satisfactory. Incidentally, the use of soda ash is not without its compensations. In ordinary practice, considerable manganese is lost through sulphur in the mixture combining with manganese to form manganese sulphide, which passes off in the slag. Now that soda ash is used, the manganese formerly lost is conserved and the saving is more than enough to pay for the cost of the sodium carbonate.

Mr. Vial was assisted in his experimental work by George S. Evans, until recently metallurgist Griffin Wheel Co.

#### W. L. Byers Acquires Producers Coke Co.

Wylie L. Byers, W. L. Byers & Co., Uniontown, Pa., doing an extensive coal and coke brokerage business, has completed negotiations for the acquisition of a controlling interest in the Producers Coke Co., another Uniontown company engaged in the same business. F. E. Weddell and his associates, with the exception of C. E. Lenhart, have sold out, their interest to Mr. Byers. Mr. Lenhart will remain with the reorganized Producers Coke Co. and continue as its president. Harry F. Hallman, in charge of the Philadelphia office of W. L. Byers & Co., will be a director of the new company. The affairs of W. L. Byers & Co. will be wound up as its obligations are completed, but for the present both companies will be continued. Mr. Byers and Mr. Lenhart are both prominent in the Connells-ville district coal and coke trade, and prior to 1919, when Mr. Byers withdrew from the Producers Coke Co. to start his own company, they had been associated for several years. Mr. Byers was district fuel administrator under the Federal Fuel Administration during the period of American participation in the World War.

#### Jones & Laughlin Will Build a By-Product Plant at Aliquippa Works

The Jones & Laughlin Steel Corporation, Pittsburgh, will build a by-product coke plant at its Aliquippa works, Woodlawn, Pa. The contract, which calls for 122 Becker type combination coke and gas ovens, has been placed with the Koppers Co., Pittsburgh. The new plant will be located at the northern end of the company's property near the blast furnaces and will be capable of producing between 1800 and 1900 tons of furnace coke daily. That amount will take care of the requirements of three of the five blast furnaces at that plant. Engineering work preparatory to the building of the plant has been started and it is expected that it will be completed and in operation by Jan. 1, 1926.

The company has 488 rectangular waste heat coke ovens capable of producing 525,000 tons of coke annually at the southern end of its Woodlawn plant. It is probable that these ovens will be maintained even after the completion of the new plant for emergency needs, as was done when the company completed its by-product plant near its Soho works, in Pittsburgh. With the completion of the new plant, the company will have coke producing capacity of 3,700,000 tons annually, of which 1,875,000 tons can be supplied by the by-product ovens.

The company has 12 blast furnaces at its Pittsburgh and Woodlawn plants with a rated annual capacity of 2,600,000 tons a year. On a basis of one net ton of coke for one gross ton of pig iron, the by-product plants can produce enough coke to meet about 70 per cent of the blast furnaces requirements. Both plants of the company being located favorably to take river shipments of coal, the item of transportation charges is much lower than if entire dependence upon the railroads was necessary. The Vesta Coal Co., with extensive holdings of coal land in Washington and Greene counties, is the company's coal mining subsidiary.

#### Electric Power in the United States

Production of electric power by public utility plants in the United States is reported for December, by the Geological Survey, at 5507 million kw-hr., compared with 5051 in November and 5193 in October. In each case fuels supplied somewhat more than two-thirds the total, while nearly one-third was furnished by water power. The total electricity produced in the calendar year was the greatest on record, being given as 58,996 millions of kw-hr., compared with 55,674 in 1923, 47,659 in 1922, 40,976 in 1921, 43,555 in 1920 and 38,921 in 1919.

In each of these six years, water power supplied more than one-third of the total, but in diminishing ratio, as it fell from 37.5 per cent in 1919 to 33.9 per cent in 1924. The large use of water power in the spring months accounts for the greater percentage of power furnished by water in the year than in the three latest months of the year.

The new plant of the Standard Sanitary Mfg. Co., built in Baltimore, was opened for public inspection Jan. 30 and was visited by many municipal officials and business men. At night Theodore Ahrens, of Pittsburgh, president of the company, and his associates were guests of honor at a dinner given by Mayor Howard W. Jackson and the Baltimore Association of Commerce.

The quarterly meeting and dinner of the Eastern States Blast Furnace and Coke Oven Association will be held at the William Penn Hotel, Pittsburgh, Thursday evening, Feb. 19. J. S. Frazier, resident manager Trumbull-Cliffs Furnace Co., Warren, Ohio, is to be the speaker and will talk about large pig iron yields and the part played by coke in turning out several record tonnages.

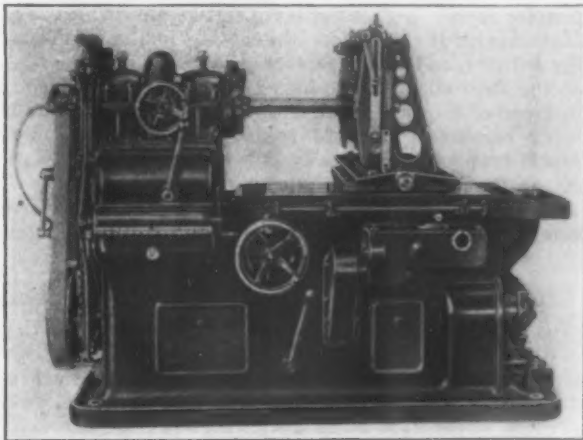


### Internal Grinder for Railroad Shop Work

An internal grinder of heavy pattern and said to be particularly adapted for railroad shop use is shown in the accompanying illustration. It may be used for either dry or wet grinding, and the standard range includes holes from 2½ to 10 in. in diameter and 19 in. long. Special spindles permit of grinding holes from 1 to 15-in. in diameter and to a depth of more than 19 in. The builder of the machine, which is designated as the model DG, is the Micro Machine Co., Bettendorf, Iowa.

A pantograph type of drive serves to keep the spindle speed constant, and belt back lash is said to be eliminated. To secure suitable work speeds for holes of different sizes, arrangement is made to vary the orbital travel of the grinding wheel spindle. To facilitate centering of the work, the main bearing can be revolved by means of a handwheel on the side of the headstock. The spindle is mounted in ball bearings. Oil holes are protected by filters to exclude grit or dirt and special seals are provided to retain the lubricant. The main cylinder has bronze bearings with automatic lubrication, other bearings in the machine being either of the ball or roller type.

A 3-hp. motor mounted in the base drives the moving parts through a standard friction clutch, the con-



Internal Grinder of Heavy-Duty Type for Wet or Dry Grinding. Arrangement is made for a variety of speeds for holes of different sizes

trol of the latter being by means of a lever at the front of the headstock. The supply of coolant for wet grinding is controlled by a convenient lever. A belt-driven pump on the outside of the base, at the rear, forces the coolant through the hollow spindle against a baffle plate, which throws it against the path of the wheel.

The bedways are 4 in. wide by 52 in. long, and are cast integrally with the base. They are lubricated by four oil wells provided with rollers, the wells being connected to equalize the oil film. The table is 20 in. wide by 48 in. long, and has a center rack drive. Automatic stops are provided as are waterways for use in wet grinding. Three longitudinal T-slots provide for the mounting of irregular work. The universal work-holding fixture is mounted on a cross slide sub-plate, with a total cross travel of 29 in. Work may be mounted on either side of the parallel bars, which are joined by a connecting link so that they can be adjusted individually or as a unit. Five speeds are provided for the table. The reverse gear box is inclosed and has automatic forced feed lubrication. Elsewhere on the machine Alemite lubrication fittings are provided.

The base is 29 by 84 in. and the overall height is 63 in. The floor space required is 4 ft. 6 in. by 9 ft. The machine weighs approximately 6000 lb.

The Association of Lift Truck and Portable Elevator Manufacturers held its annual meeting on Jan. 30 and 31 in the Hotel Commodore, New York. Warren Lyman was elected president and Frank L. Eldmann, 126 Jefferson Road, Princeton, N. J., secretary-treasurer.

### Abrasive Disk with Deep Corrugations

An abrasive disk of special design for grinding large surfaces and said to prevent warping by the excessive heat generated in such operations, has been placed on the market by the Gardner Machine Co., 412 East Gardner Street, Beloit, Wis. This disk, which is



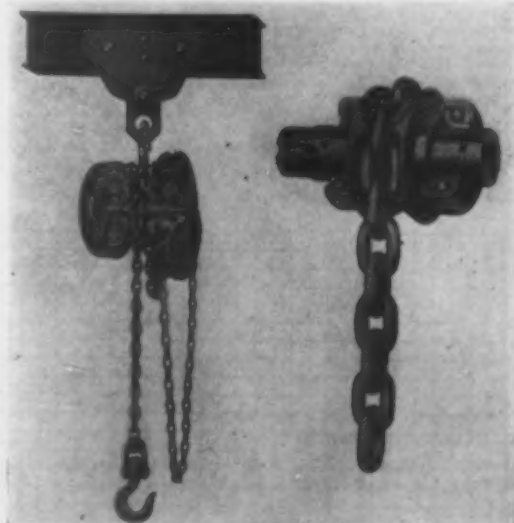
The Deep Corrugations Are Intended to Provide Chip Clearance During the Grinding Operation, Making for Cooler Cutting

known as the G. I. A., deep-corrugated disk, appears in the accompanying illustration.

The surface of the disk is corrugated as shown, the holes extending practically through the disk to the cloth backing. The deep corrugations are intended to provide for plenty of chip clearance during the grinding operation, and it is claimed that heating of the work is reduced to the minimum and that the disk will not glaze.

### Ball Bearings Increase Efficiency of Chain Block

A recent development in hoisting equipment is the ball-bearing spur-gear chain block illustrated, in which two chrome-alloy ball bearings are provided for supporting the load sheave shaft. These bearings take the entire weight of the load and are said to withstand the shock of the thrust and overload surges. They are inclosed in small chambers, and steel and felt washers are provided to prevent the entrance of dust and grit. Continuous lubrication of the bearings, driving



Large Ball Bearings Support the Load Sheave. The hand chain pull required to lift the load is claimed to have been reduced

pinion, shaft and driving gears is also provided. Electrically welded chain, drop-forged detachable shackles and steel safety hooks are among the structural features. It is claimed by the makers of the chain block, the Yale & Towne Mfg. Co., Stamford, Conn., that the ball bearings serve to reduce friction, increase the efficiency and prolong the life of the block. The blocks are available in several sizes, ranging from ¼ to 20 tons.

# Proposed Hearth and Bosh Construction\*

## Modern Ideas Applied to Blast Furnace Design for Highest Combustion Efficiency—Elliptical or Similar Section Favored

BY S. P. KINNEY AND FRASER B. MC KENZIE†

**M**ODERN iron blast furnaces are cylindrical in shape, the crucible, hearth, bosh, mantle and stack sections being constructed after the shape of cylinders or truncated cones. A horizontal section taken through the hearth area or tuyere plane is circular, tuyeres for supplying air for the combustion of coke being equally spaced around the circular hearth area.

### The Combustion Zone

Combustion of coke takes place directly in front of the nose of each tuyere.‡ The combustion space in the front of the nose of each tuyere is spherical, tubular, or conical in shape; and extends toward the center of the hearth of the furnace for a distance of approximately 36 to 46 in. from the nose of the tuyere.\*\*

For the purpose of clearness it might be said that the limit of penetration of the combustion zone toward the center of the hearth of the furnace is defined as the point, on a line through the center of the tuyeres and the center of the hearth, where the carbon dioxide and oxygen content of the gas present is less than 2 per cent by volume. (See Fig. 2.)

Under present operating conditions the size of the combustion zone in the iron blast furnace is approximately the same, regardless of the size of the furnace. It has been shown by Perrott and Kinney (Fig. 1) that the distance of penetration of the zone of combustion into the interior of the hearth of the furnace is a constant not dependent upon the size of the furnace, the

number of tuyeres, or the amount of air blown. As the combustion of the coke, which reaches the tuyere, takes place within these zones, the highest temperatures attained in the furnace are found within these zones.

### An Area of Non-Combustion

Since the zones of combustion are approximately constant in size and in depth of penetration in all furnaces, and since the depth of penetration is approximately 36 to 46 in., there is a circular area left in the center of the hearth plane of each furnace where no combustion is taking place. From the standpoint of the gases present this might be called a "reducing zone." (See Fig. 2.)

This circular area in the center of the hearth of the furnace forms the base of a conical volume which is in contact with the molten iron and slag in the bottom of the furnace, and this zone extends well up into the bosh of the furnace. Since combustion takes place directly in front of the nose of each tuyere, coke is continually being consumed at these points; this causes a more rapid downward movement of the stock on the walls of the furnace than in the center.††

Movement is slow in the center of the furnace in comparison with that on the walls.

### Lower Temperature in Center of Furnace

Since combustion is not taking place in the center area or cone, its temperature is much lower than that of the zones directly in front of the tuyeres. The central cone affords a space where gas reactions, such as direct reduction and the formation of cyanides, may proceed at the expense of heat, and therefore carbon.

When the furnace operation is proceeding smoothly, the central core or cone is probably composed of coke, some slag and small quantities of metal. The core at all times, especially during periods of irregular operation, acts as a channel or source of supply of contaminating materials, which cools and lowers the grade of the iron in the crucible below.

As the central zone is always cooler than the zones

\*Published by permission of the director, Bureau of Mines, Department of the Interior.

†Respectively assistant metallurgical chemist, Southern Experiment Station, Bureau of Mines, and blast furnace superintendent Central Iron & Coal Co., Holt, Ala.

‡Joseph, T. L., Royaster, P. H., and Kinney, S. P., "Significance of hearth temperatures," *Blast Furnace and Steel Plant*, 1924, pages 154 to 158.

\*\*Perrott, G. St. J., and Kinney, S. P., "Combustion of Coke in Blast Furnace Hearth," *Transactions American Institute of Mining and Metallurgical Engineers*, Vol. 69, 1923, page 543.

††Royaster, P. H., and Joseph, T. L., "Effect of Coke Combustibility on Stock Descent in Blast Furnaces," *Transactions American Institute of Mining and Metallurgical Engineer*, issued with *Mining and Metallurgy*, March, 1924.

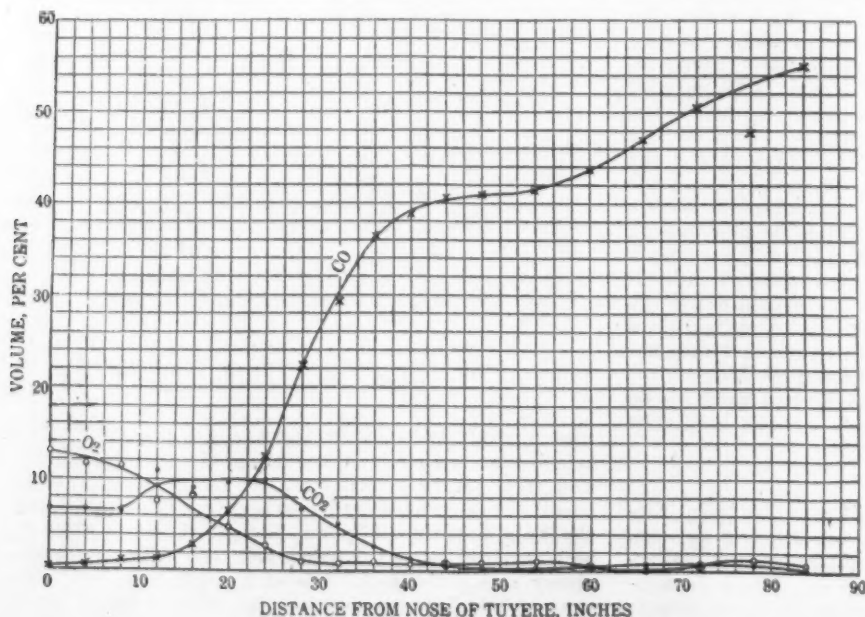


Fig. 1 — Average Results of Gas Sampling at the Hearth Level of Ten Blast Furnaces



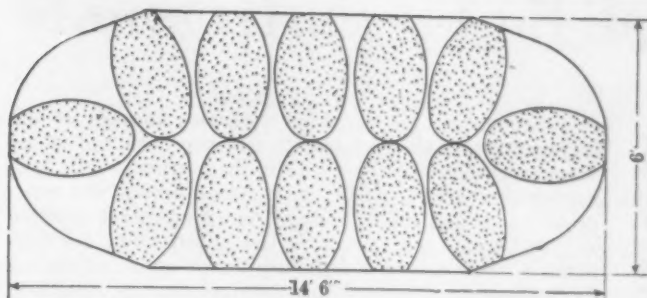


Fig. 3—Diagram of Proposed Blast Furnace Hearth Design, Showing Oxidizing and Reducing Zones

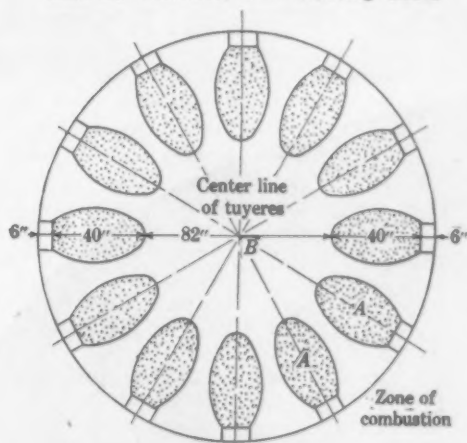


Fig. 2—Plan of Tuyere Plane, Showing Extent of Penetration of Combustion Zone

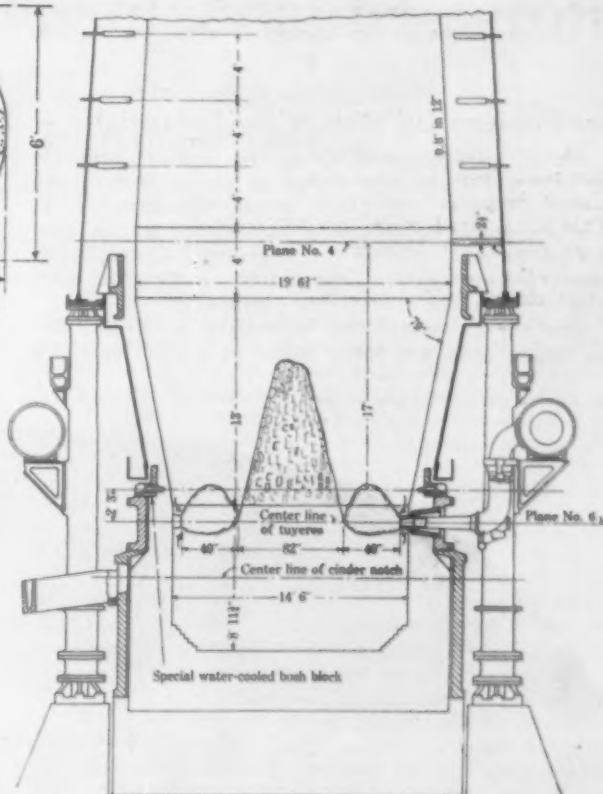


Fig. 4—Approximate Size and Shape of Combustion Zones, with Central Cone Outlined

directly in front of the nose of the tuyeres, it rapidly absorbs heat from the combustion zones, and therefore has a cooling effect on the heart area as well as on the molten slag and metal below. With normal operation, the core has a diameter which is approximately 80 in. less than the diameter of the hearth. When tuyeres become fouled with slag, and operation becomes abnormal, the combustion zone moves upward, the central core at the hearth level becomes larger and the temperature lower.

It is a well-known fact that in blast furnace operation today more than the theoretical amount of carbon is required to reduce and melt a ton of iron. Furnace men have found by experience that an excess of carbon must be supplied to allow for irregularities in operation, also to maintain temperatures in the hearth which will permit smooth operation. Much of the excess carbon is consumed in keeping the hearth area hot; and when for any reason the excess carbon is taken off, the furnace hearth gets cold and smooth operation ceases. Control of the furnace is largely dependent upon a sufficient and constant supply of heat in the hearth.

#### Removal of the Zone of Non-Combustion

To overcome the above difficulties in operation, the core in the center of the furnace should be removed. This probably can be accomplished by means of a rearrangement of the position of the tuyeres around the hearth area. The tuyeres should conform to a hearth area which will permit penetration of the combustion zones to or near the center of the furnace. To do this the tuyeres of the furnace should be arranged, not in a circle (Fig. 2), but around the edge of some curved or geometrical figure which has two axes, one longer than the other, as in Fig. 3: as, for example, a parabola, an ellipse, hyperbola or rectangle.

A comparison of the ordinary blast furnace and that of the proposed design may be shown as follows, studying Figs. 2 and 3 at the same time:

Conditions	Ordinary Furnace	Proposed Furnace
Hearth:		
Diameter, ft.....	14	14.5
Length, ft.....	154	50
Area, sq. ft.....		

Conditions	Ordinary Furnace	Proposed Furnace
Hearth:		
Area of oxidizing portion, sq. ft.	43	43
Per cent of total area.....	29	86
Area of reducing portion, sq. ft.	111	7
Per cent of total area.....	72	14
Tuyeres:		
Number .....	12	12
Diameter, in.....	10	10
Wind, cu. ft. per min.....	40,000	40,000
Blast pressure, lb. per sq. in.....	14	?

#### Apparent Advantages of the Proposed Design

This hearth and tuyere arrangement will produce a hearth and furnace which will have some of the following characteristics:

1. There will be no core or cone in the center. (See Figs. 3 and 4.)
2. The hearth area will have a higher and more uniform temperature throughout which will, in turn, permit greater ease and latitude of furnace control.
3. Materials from above will be fed into and consumed evenly and regularly throughout the area of the hearth. This will cause more even movement of stock in the furnace, and will overcome certain troubles due to distribution.
4. Removal of the central core will remove a heat-consuming area in which direct reduction and the formation of cyanides takes place at the expense of carbon; this in turn probably will reduce coke consumption.
5. Contamination and cooling of metal by a stagnant zone in the center of the furnace will not take place.
6. The capacity of a furnace constructed to conform to a hearth which has two axes, one longer than the other, will be increased, not by increasing the diameter of a circle, as is done in current practice, but by increasing the length of the major axis.

At present the writers are attempting to measure temperatures across the hearth plane of a furnace in the Southern district, in Alabama. For relative measurements of temperatures, see penetration tests reported by J. E. Johnson, on page 105 of "The Principles, Operation and Products of the Blast Furnace,"

published in 1918; and temperature observations on a cupola, where it was shown that the temperature of the hearth decreases or increases with the carbon

dioxide content of the gases, by A. W. Belden, "Foundry-Cupola Gases and Temperatures," Bureau of Mines Bulletin 54, 1913, page 26.

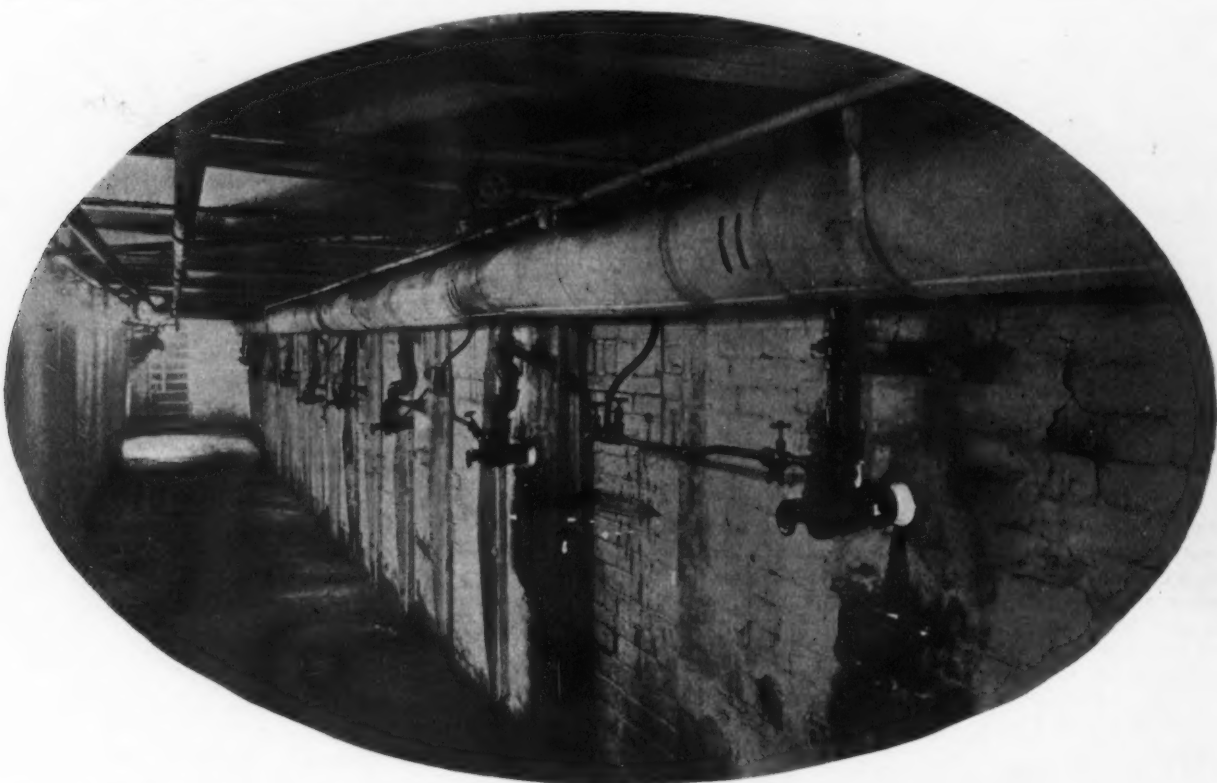
### Low-Pressure Oil Burner for Industrial Use

An oil burner operating on the Venturi principle has been developed and placed on the market by the Hauck Mfg. Co., 126 Tenth Street, Brooklyn, N. Y. This is reported to be giving exceptional service, surveys by the A. C. Nielsen Co., engineer, Chicago, showing marked savings in oil consumption and cost of operation through the use of this equipment.

One survey covers the Milwaukee Steel Foundry Co., where cores are being baked at a cost for oil of

The burners are provided with two sources of air supply, one obtaining intimate mixture with the oil as it emerges from orifices within the burner, while the surrounding supply makes an envelope around the cone of oil vapor and air emerging from the central portion of the burner and completes the requirement for full combustion. Either a reducing flame or an oxidizing flame may be provided, by manipulation of this air supply.

In a large Eastern foundry, these burners are installed at 31 ovens and furnaces. It is reported that



Hauck Low-Pressure Burners Under a Battery of 31 Core Ovens Used to Bake Cores for Sectional Boilers. Oil is supplied through the small pipes leading to each burner, while the air comes from the large blast pipe above.

Two Sources of Air Are Used in This Venturi-Type Oil Burner. One surrounds the central oil entry and the air becomes intimately mixed with the oil issuing under pressure from the radial orifices. The other air supply, both being under ready control, surrounds the first and, issuing at the nozzle in envelope form, surrounds the sprayed oil and air and completes the requirements for combustion.



5.6c. per ton of cores, when working at capacity. Eight of the burners are installed, four in each of two ovens, one burner being in each corner about 12 in. above the floor. One oven is used for baking cores and the other for molds, each being 14 x 20 ft. x 10 ft. high inside and having a capacity of 40 tons. Oil is pumped from a submerged and heated tank through filters to the burners under a pressure of about 30 lb. Air is fed to the burners at a pressure of about 2 lb.

In baking cores the temperature is raised slowly to about 400 deg. Fahr. in about 4 hr. Then two burners in opposite corners are shut off and the other two regulated to a point where the temperature may be maintained at 400 deg. for the baking period of 1½ to 5 hr. With the maximum load of 40 tons of sand in the furnace, a total of 31½ gal. of oil gives the complete cycle. Consumption is 6 gal. per hr. in bringing the furnace and contents up to baking temperature and 1½ gal. per hr. for then maintaining temperature.

ovens which had cooled off for two days are brought up to normal operating temperature in 20 min. The oil pressure used here is 15 lb. and the air pressure 16 oz. The burners operate on 30 to 28 deg. Baumé oil without preheating.

Another survey, made at the plant of the Thomas Laughlin Co., Portland, Me., where marine hardware is manufactured, covered burners in furnaces in the forge shop. The furnaces operate approximately 50 per cent of the time and are brought up to the required temperature in about 15 min. The oil pressure used is 10 lb. at the pump, but considerably lower at the burner, the air pressure being 1.5 lb.



# Manufacture and Uses of Stainless Iron\*

## Hamilton-Evans Direct Process Described—Cost and Physical Properties—Heat Treatment, Rolling and Forging

BY H. S. PRIMROSE

THE method of making mild stainless steel in the past has been to melt mild steel scrap in an electric furnace, and to introduce the chromium by adding ferrochrome to the molten steel. As stainless iron contains about 0.10 per cent and under of carbon, the ferrochrome used has to be practically free from carbon and, as this alloy free from carbon is very costly, the resulting alloy is also expensive.

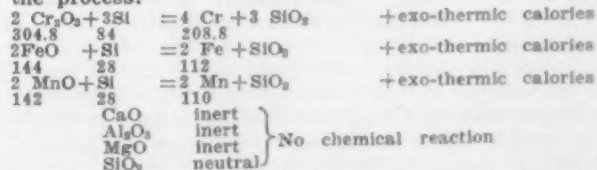
### A Direct Process

Quite recently a new process has been evolved whereby mild stainless steel can be produced more cheaply. This process, which is known as the Hamilton-Evans, commences by melting the mild steel scrap in the usual way in an electric furnace such as the Héroult type. The slag is then poured off and a slag, known as the reception slag, is introduced onto the bath of molten steel. When this slag is in a suitable condition, chrome ore intimately mixed with ferrosilicon is thrown onto this slag. The entire body of the ore with all its refractory components is fused and the chromium oxide, iron oxide and manganese oxide are reduced by the action of the silicon in the ferrosilicon. The chromium and other metals so formed descend into the molten metal while the other components of the ore are retained in the slag. The silica resulting from the oxidation of the silicon combines with the lime in the slag, and the basic lining is thus protected from excessive corrosion while the resulting slag, after reduction has taken place, acts as a refining agent for the molten metal.

In the preparation of the raw materials for making mild stainless steel by the Hamilton-Evans process, it is necessary, in order that the minimum quantity of slag may be produced, that the chrome ore should be as rich as possible in chromic oxide and iron oxide. The ore should be crushed down preferably to about 20 mesh, and all coal, coke and other carbonaceous matter must be removed. The ferrosilicon used for reducing the ore may be of any composition, but the richer this material is in silicon, the better it is for working. It is necessary to use ferrosilicon free from carbon in order to produce the softest mild stainless steel, as carbon cannot be separated or refined out. The ferrosilicon should be broken down to about the same degree of fineness as the chrome ore which it is required to reduce. In preparing the mixture of chrome ore and ferrosilicon, the analysis of the ore must be known, as it is advantageous to adjust the proportion of iron oxide and chromic oxide.

### Chemical Reactions in Ore Process

The following chemical reactions take place during the process:



The usual analysis of the chrome ore used is as follows:

	Per Cent
Cr <sub>2</sub> O <sub>3</sub> .....	50.34
FeO .....	22.23
MnO .....	0.40
SiO <sub>2</sub> .....	4.20—neutral
Al <sub>2</sub> O <sub>3</sub> .....	6.40—neutral
MgO .....	15.70—neutral
CaO .....	0.63—neutral
	100.00

\*Abstract of a paper presented Dec. 19, 1924, at a meeting of the Manchester (England) Association of Engineers.

An efficiency of 60 to 70 per cent of the silicon in reducing the oxides is found, and the balance of the silicon is spent in the adjustment of the complex silicate reactions. About 25 per cent of the total chromium oxide is left unreduced in the slag as otherwise the slag will become too corrosive for the furnace lining. The slag is then in a condition for refining the resulting mild stainless steel. If facilities for preheating the mixture before adding to the slag are available, this greatly accelerates the reducing operation.

### Special Slag Necessary

In the actual working of the process, the furnace is charged with the mild steel scrap together with the necessary amount of limestone, ore, etc., to melt and purify it. The first slag formed in this melting is completely removed to eliminate the oxidized impurities, which otherwise would be reduced and passed back into the steel. The reception slag of limestone, fluorspar, mill scale and chrome ore will then have to be added to the molten metal.

The composition of this reception slag is determined by the following considerations:

There must be sufficient lime present to maintain basic conditions throughout the reaction, so that the acid product SiO<sub>2</sub> may not predominate, with consequent corrosion of the furnace lining. Moreover, immediately acid conditions occur the efficiency of silicon as a reducing agent is diminished.

Its mass must be sufficient to enable enough heat to be stored to insure that, with the exo-thermic heat resulting from the oxidation of the silicon contained in the mixture, the ore will be melted, the necessary oxides reduced and by gravity the metals be separated from the molten slag.

There must be sufficient iron oxide to insure that oxidizing conditions are maintained during the melting.

As soon as the reception slag has all been added, heat is applied by electric current through the electrodes of the electric furnace until this reception slag is brought to a molten condition. When the temperature is sufficiently high to effect reduction, the ferrosilicon and chrome ore, which have been ground and mixed together, are gradually added to the molten steel. The reaction between the oxides of the metal and the silicon is exo-thermic and consequently, within a few minutes after the completion of the addition of the chrome ore and silicon, the reduction of the oxides will be complete, and the reduced metals chromium and iron will have entered the molten mass of steel beneath the slag. The resulting product will be mild stainless steel containing approximately 12 per cent chromium, and it is desirable to continue the application of heat for a short time to refine the resulting metal.

After the oxidation of silicon has occurred, it is necessary to apply heat in order that a slag may be maintained in a molten condition for the purpose of refining, and that the necessary casting temperature may be adjusted. In order that the heat may be supplied as above stated, the voltage must be high enough to obviate entirely the necessity of immersing the electrodes in the slag. If the electrodes are allowed to dip into the slag, the silicates already formed may be reduced to silicon and in consequence both carbon and silicon will be conveyed into the steel, and there is a risk of adding carbon to the molten bath.

### Cost of Making Stainless Iron

The future of the commercial development and wide engineering application undoubtedly lies with the low-carbon alloys containing chromium. The great hin-

drance hitherto to the rapid progress of commercial expansion, however, has been the high cost of production of such steel. With the Hamilton-Evans process using chrome ore and ferrosilicon, which are both comparatively cheap and easily obtainable commodities, this direct process puts an entirely different commercial phase on the rustless industry.

The cost of producing mild stainless steel in ingot form by the ferrochrome process is about £65 per ton, but by the Hamilton-Evans process ingots are made at £30 per ton, which more than halves the first cost of the metal.

Mild stainless steel is a steel containing from 11 to 14 per cent chromium, with 0.1 per cent carbon and under, the other constituents, silicon, sulphur, phosphorus and manganese, being all more or less in normal percentages. The chief effect of chromium may be summarized as follows:

It lowers the carbon content of the eutectoid proportionately to the chromium content, so that with 12 per cent chromium the carbon content of the eutectoid is lowered to a third of the normal.

It raises the temperature at which the transformation points occur in the steel.

It diminishes the rate of carbon diffusion in the steel.

Owing to the first effect, a small amount of carbon exerts great influence in chromium steel. Carbon in the presence of from 12 to 14 per cent of chromium has about three times the hardening effect of similar amounts of carbon in a plain steel. Owing to the second effect, the quenching and tempering temperatures have to be higher than in the case of ordinary steel. The third effect explains the air-hardened properties of this steel, and also its capability of retaining strength at high temperatures. Also, owing to this effect, it can be readily seen that by variation of the carbon content with different quenching and tempering temperatures, a very great variety of physical properties can be obtained with the same chromium content. This fact makes high-chromium steels applicable to most purposes where steel can be used.

#### Physical Properties

The physical properties obtained from mild stainless steel in the annealed condition, and also in the hardened and tempered state, cover a very wide range. This will be seen from the table, which shows the physical properties. These tests were made on "as rolled" and "annealed" bars quenched from 950 deg. C. in oil and tempered at various temperatures. Up to 500 deg. C. there is little or no change or reduction in the tensile strength, while there is an increase in ductility due to the relief of stresses set up during hardening. Between 500 and 600 deg. C. the tensile strength falls off quickly, while from 600 to about 750 deg. C. it falls slowly and steadily.

Table of Physical Tests of Tempered Bars

Tem- pered at Deg. C.	Yield Point, Tons Per Sq. In.	Tensile Strength, Tons Per Sq. In.	Elongation, Per Cent	Reduction of Area, Per Cent	Izod Impact, Ft. Lb.	Brinell Hard'n's, Kg. Per Sq. Mm.
200	66.5	73.0	12.0	37.5	35	340
300	66.0	72.5	12.5	37.0	39	332
400	65.5	72.3	16.0	50.0	38	332
500	59.0	72.5	18.0	52.0	36	240
600	38.0	48.0	22.5	62.0	66	235
700	31.0	41.0	27.0	66.0	80	192
750	28.0	36.6	30.0	69.0	88	174

This very slow rate of fall in tensile strength with the increase of tempering temperature in the range of 600 to 750 deg. C. is very useful commercially, as it allows quite a wide range of temperature to be used when articles have to be tempered to produce a definite tensile strength.

#### Heat Resistance at High Temperatures

One of the valuable properties of mild stainless steel is its behavior at high temperatures. When pieces of the material which have been polished are heated up gradually, temper colors appear on the surface similar to those obtained when ordinary carbon steels are heated up, but in the case of mild stainless steel these temper colors appear at much higher temperatures.

#### Hot Rolling and Forging of Stainless Iron

The hot working of this material has presented considerable difficulties owing to its air-hardening prop-

erties, and its red hardness properties. In addition to this, the material is most susceptible to surface seams and non-metallic inclusions when being hot rolled or forged. All these difficulties have been gradually overcome by very careful investigation and collaboration with the rolling mills and forges working up this material.

The most suitable hot rolling temperature for this material is from 1050 to 1100 deg. C., and it is essential that for rolling and forging the material should be brought up slowly to about 900 deg. C., and then slightly quicker to the rolling and forging temperature. It should be allowed to soak for a long enough period to insure a uniform temperature through and through.

For forging it should be worked quickly and with rapid blows at temperatures of from 1150 to 900 deg. C. Below from 900 to 850 deg. C. it is not so easily deformed, and if any heavy work is put on the material after it has fallen below these temperatures it is very apt to be badly stressed or to burst.

In rolling, the material should be rolled quickly and hot, and the first passes should be very light, after which ordinary drafts can be used provided the reduction is not too drastic. It is important that the drafts should be such that there is no chance of finning, otherwise the steel is apt to spread along the edges. Not only will this happen, but when a fin is formed, after the material has gone through the passes in the roll, due to the spread of the material, this fin will be rolled over or lapped into the material at the next pass.

It has been found that the steel spreads considerably more than mild steel, so that special precautions have to be taken in drafting the rolls for the passes to avoid this finning for, if this is not done, the material overgorges the roll and swabs out and forms a fin. This has been found to be the case in rolling down from ingots to billets, sheet bars, etc., from billets to bars (all sections, rounds, squares, hexagons, flats, etc.), wire rod, strip, etc., and success has been obtained only after taking the above precautions. In fact, it has been found necessary when new sizes are required, even after considerable experience in rolling has been gained, to put through experimental pieces to find out the proper adjustment for the rolls.

#### Annealing

The critical range of mild stainless steel runs from about 865 to 965 deg. C., which is very wide, due to the slowing of the rate of carbon diffusion by the presence of chromium in the steel. To anneal mild stainless steel to obtain the maximum softness, it should be heated up slowly to about 1000 deg. C. and held at this temperature for a period of time in proportion to the mass of metal, and then allowed to cool off slowly in the furnace, making sure that no currents of cold air enter the furnace, otherwise hard patches will be found in the steel where these currents of cold air have come into contact with the material. Although steel annealed this way has the maximum degree of softness, it is not a desirable condition in which to have the steel for easy machining. The steel in this state is very soft and tough, and so drags and tears when machined, leaving a very rough surface.

To soften the material for good machining properties or cold drawing and cold rolling, it is best to anneal at from 750 to 800 deg. C., preferably about 780 deg. C., and then to cool in the furnace, or draw and cool in the open air. As the lowest point of the critical range is not reached by this method, it is really a high-temperature drawing process, and not annealing, in which the steel is drawn to a temperature below the critical point.

The Brinell hardness obtained from annealing the steel at 1000 deg. C. is about 150, and by softening by high-temperature drawing at 780 deg. C. the Brinell hardness obtained is about 175 to 180. It must always be remembered that mild stainless steel has distinct air-hardening properties, so that it should always be annealed or high-temperature drawn at 750 to 800 deg. C. as stated above, after it has cooled down from a hot-rolling or forging temperature, before it can be successfully machined or cold-worked.



The material will cold roll, cold draw and deep draw or press very well, but owing to the percentage of chromium in the metal, the depth of each draw, when the steel is being deep pressed or drawn, obtained at each operation is only about half that obtained when working on mild steel, before the material must be annealed. In cold rolling and cold drawing, the reduction of one gage at a pass can be used, but it is found necessary to anneal after every second or third pass.

In cold working strains are always set up in the material, and sometimes strained parts are not confined to the surface where they can be ground off, but are inherent in the steel and the strains must be re-

moved by heat treatment. These strains are not only liable to cause rust, but are apt to cause the steel to crack if put into service. It is thus evident that it is advisable to anneal or high temperature draw at 780 deg. C. all material which has been cold worked.

Mild stainless steel can be successfully welded by either the electrical process or by the oxyacetylene method. It will not weld by the usual method of heating in a smiths' fire. In welding the temperature of the metal at the weld is raised to a fairly high temperature, so that the material on cooling down will air-harden, and should be annealed before any turning, grinding or polishing is done.

## Visual Comparison of Belt Slip

Convenient Method of Studying Relations Between Different Drives—Short-Center Belt with Large Contact Arc

BY VIGGO SAHMEL\*

**D**UE to limitations on space in manufacturing plants, the short center belt drive is coming into wider use. Some years ago a special form of short center drive was introduced which also permits high pulley ratios, low belt tension, high overloads and minimum belt slip. The arrangement of this short center drive differs in many respects from the ordinary long center

given percentage of slip, it is necessary either to increase the width of the belt; increase the initial tension; increase the coefficient of friction  $f$  by using sticky belt dressing, wood, canvas or paper pulleys; or increase the arc of contact  $\alpha$ . High initial tension is, of course, bad for belt and bearings; sticky belt dressings injure the belt, and the correct crown is

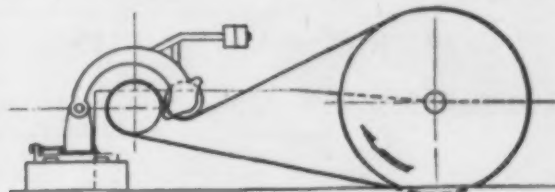


Diagram of Effect of Weighted Idler Wheel in Increasing Arcs of Contact of Belt on Both Pulleys

Apparatus for Measuring Slip Visually with Different Belt Arrangements

drive. The driving and driven pulleys are placed close together. A free pulley is hinged adjacent to the smaller pulley and bears on the slack side of the belt so that it wraps the belt farther around the smaller pulley. The belt is of such length that the loose side is within a few inches of the tight side and the initial tension in the belt is due solely to the weight of the hinged floating pulley. The most important feature of the drive is the large arc of contact of the belt with both pulleys, resulting in increased grip of the belt on the pulleys for given initial tension and belt size. When the load is applied the belt stretches but, instead of coming looser, the tension in the slack side is maintained constant by the free pulley and the additional length is automatically wrapped still farther around the small pulley, increasing the arc of contact.

The fundamental formula for belts is  $T_2 \div T_1 = e^{f\alpha}$ , where  $T_2$  is the tension in the tight side of the belt,  $T_1$  is the tension of the slack side,  $e$  the number 2.72,  $f$  the coefficient of friction between the belt and the pulley, and  $\alpha$  the angle of contact of the belt with the pulley.

To increase the capacity of the drive, allowing a

eventually worn off wood or paper pulleys. The arc of contact of the belt with the smaller pulley in a certain open drive was 164 deg. On installing the short center drive this was increased to 235 deg. at no load and 251 deg. at full load.

At the Power Show recently held in New York a device was exhibited which demonstrated visually the relative slip of a short center drive of this type and of an open belt drive. This aroused much interest on the part of belt users and engineers generally, not only because of its bearing on belt drives, but also in itself as a method for comparing the speeds of rotating or reciprocating parts.

### Three Equal Pulleys Used

A motor-driven line shaft carries three small pulleys of equal diameter, connected respectively by belts to three large pulleys, also of equal diameter. One of the pulleys, which will be called the timing pulley, runs free, while the two others are fitted with Prony brakes. One of the brake pulleys is belt driven by the short center drive and the other by an ordinary long center drive. The frames carrying the large pulleys are balanced upon pivots and counterweighted, so that equal

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bearing pressures can be produced on each pulley bearing and approximately equal initial tensions in each belt.

Upon the web of each of the large pulleys is marked a white cross. The three crosses are illuminated by a flicker lamp synchronized with each quarter revolution of the timing pulley. If the two pulleys carrying Prony brakes are running at the same speed as the free pulley, the crosses upon each of them will always be illuminated when in the same position and will appear to be standing still, but if the two brake pulleys are going, say, 1 per cent slower than the timing pulley, each cross then will be 0.01 of the circumference of the circle behind the position occupied at the time of the previous illumination, and will appear to the eye to be rotating backward. This phenomenon is frequently noticed in moving pictures where a locomotive, for example, pulling into the station appears to have the wheels spinning backward.

The actual slip may be computed by comparing the time of one backward revolution of the observed image of the cross with the speed of the pulley. The slip in per cent is then 100 times the number of revolutions made by the cross in a minute divided by the number of revolutions made by the timing pulley in a minute. As the lag behind the timing pulley is cumulative, the magnitude of the slip may be determined with almost any degree of accuracy required.

When this test was first proposed and the apparatus set up in the plant of F. L. Smidth & Co., the delicacy of this method was not appreciated and only ordinary care was given to obtaining equal pulley ratios. The pulleys were first made with crowns in the usual way, but it was found that the belts would work to the side

of the pulleys and thus change the effective diameter of the pulley and consequently the pulley ratio. Accuracy in ratio of the pulleys was obtained by turning all at one operation and without crowns.

Although the results were improved, it was still impossible to make all three crosses remain stationary at no load, until it was suggested that possibly the belts were not of equal thickness and belts made from tracing paper and of uniform weight were substituted. A heavy load could not, of course, be carried, but the results were at least consistent. By careful selection of leather and by buffing the belts to uniform thickness, the desired results were finally obtained with leather belts. It was also noticed that belts did not give the same results when turned hair as when turned flesh side to the pulley, but that the neutral axis of the belt (and therefore the mean effective diameter of the pulley) is closer to the hair than to the flesh side of the belt.

Starting with equal pulley ratios and equal belt thickness, at no load both the short center driven and the long center driven crosses will stand still. On applying a light load, both crosses start to rotate slowly backward, the cross on the long center drive pulley rotating a little faster than the cross on the short center drive pulley. However, as the load increases, without changing the belt tension, the cross on the long center drive pulley rotates backward at an increasing rate, while the cross on the short center drive pulley rotates about as before. By the time the slip on the open drive has reached 3 or 4 per cent, the slip on the short center drive is still within 1 to 2 per cent. If the load is still further increased, the open drive belt jumps off at a load where the short center drive still has a large reserve capacity.

## ELECTRIC SOAKING PITS

### Their Heat Balance Compared with Fuel-Fired Furnaces

BY T. F. BAILY\*

**G**AS or coal-fired soaking pits are perhaps the most inefficient furnaces to be found in operation in the steel industry, requiring substantially as much fuel for "soaking" hot steel as is required in a modern continuous billet heating furnace for bringing the steel from cold to the rolling temperature.

This is readily accounted for by the fact that in the billet heating furnace the products of combustion pass over cold steel before leaving the furnace, allowing the cooling gases to give up heat at a low range of temperature, while in the soaking pit, in heating or soaking steel which has been charged hot into the pits the temperature of this steel is so high that only a small part of the heat in the gases is absorbed by the steel.

From a careful calculation on the operation of an electrically heated pit it has been found that the heat absorbed by 3.3-ton ingots charged into pits with a skin temperature of 1670 deg. Fahr. and heated to 2350 deg. Fahr. is 153,540 B.t.u. per gross ton. Good average practice on producer-fired pits under the same heating conditions will require at least 160 lb. of coal of 13,500 B.t.u. calorific value, or a heat value of 2,160,000 B.t.u., or its equivalent in coke oven gas, or approximately 4000 cu. ft.

This 2,160,000 B.t.u., of which only 153,540 B.t.u. is effective in the heating of the steel, represents a thermal efficiency of 7 per cent, while the electric pit requires under the same conditions only 60 kw.hr. per ton, or 204,720 B.t.u., showing a thermal efficiency of 75 per cent.

Since modern steel works power plants can produce a kilowatt hour for approximately 25,000 B.t.u. of fuel, or a little less than 2 lb. of coal, the fuel required in the boiler plant for producing the 60 kw.hr. for electric heating of steel is only 1,500,000 B.t.u. as compared with 2,160,000 B.t.u. if the producer or coke oven gas is used for heating directly; or 111 lb. of coal if used in the power house for the electric pit as compared

with 160 lb. of coal or 4000 cu. ft. of coke oven gas, or a saving in fuel of more than 25 per cent.

The character of load offered by electric pits is such that they earn a low rate when supplied from central station power. In most instances the actual "fuel" cost is less when supplied with central station power than when coal is used in producers for fuel-fired pit operation or where coke oven gas is used, based on its equivalent value in coal.

It is thus to be noted that from a fuel cost standpoint alone, with ingots charged into the pits shortly after stripping from the molds, the actual cost of this item will compare favorably with fuel-fired pits, besides making large savings in metal and giving better surface conditions on the rolled steel and better control of the heating operation generally.

### Manganiferous Limestone as an Oxidizer in the Cupola

Some interesting information on the use of manganiferous limestone in a cupola is found in a paper, "Treatment of Gold Bearing Quartz of the Kolar Gold Field, India," by R. H. Kendall and A. F. Hosking. It is published in "Bulletin 242 of the Institution of Mining and Metallurgy" (London) for November, 1924. The following brief abstract is furnished by M. W. Von Bernewitz, Pittsburgh.

According to the authors a large deposit of manganiferous lime was found near the gold field. An analysis showed it to contain 29.4 per cent CaO, 27.13 per cent CO<sub>2</sub>, 16.0 per cent Mn and 13.6 per cent SiO<sub>2</sub>. The mineral, dialogite or rhodocrosite, is chiefly carbonate of lime and manganese. It is found to be an efficient oxidizer in the cyanide process of gold extraction as well as in foundry cupolas at this group of mines for melting cast iron. Indian coke, the only fuel obtainable at reasonable prices, carries from 20 to 25 per cent ash. Uncalcined manganiferous lime enabled the foundry to get perfect melts with Indian coke, rendering the slag almost as liquid as melt. The quality of the castings (for rock crushers, stamping mills, tube mills, and numerous accessories) produced is first class. Manganiferous lime is thus an oxidizer of considerable value.

\*Baily Furnace Co., Alliance, Ohio.



## BOUGHT FOREIGN STEEL

## Hearing in Bethlehem Merger Case Is Continued at Philadelphia

Ten Thousand Tons of Shapes and Bars from Luxemburg and Germany Bought by One Company—Testimony as to Abolition of Pittsburgh Plus

PURCHASES of its steel have been on a delivered basis practically ever since the Federal Trade Commission abolished the Pittsburgh base, according to testimony given at the hearing in the Bethlehem merger case at Philadelphia last week by Frank J. McNeive, general manager of W. F. Potts & Sons Co., jobber, with warehouse in Philadelphia. He said his company distributes bars, plates, sheets and sheet steel products. Previous to the order, the witness declared, sales were generally made to his company on a Pittsburgh basis with the freight from Pittsburgh added. Now, he told Attorney Bane, sales are made on a delivered basis with freight allowed.

"And since you have been sold on a delivered price with freight allowed, has there really been any difference in cost to you?" inquired Mr. Bane, attorney for the commission.

"On some lines, yes, sir," Mr. McNeive replied.

"What lines, please?"

"Terne plate, for instance; roofing plates. We bought all our roofing plates from the American Sheet & Tin Plate Co., which makes all of the roofing plates at Sabraton, W. Va., and we get the benefit of the rate from Sabraton to Philadelphia, which is 30.5c. as against 32c., the carload rate from Pittsburgh."

The witness said there had been no difference in cost to the company on any other product. Mr. McNeive named numerous sources from which his company purchased steel both before and since the Bethlehem merger, its bars, bands and small shapes representing about 1500 tons a year.

## Past and Present Sources of Supply

Mr. McNeive said that prior to the merger he did not consider either Bethlehem or Lackawanna as a source of supply for soft steel commercial bars. He stated that his company went to Lackawanna in 1920, he thought, when it was difficult to get material. Prior to the acquisition of the properties of the Lackawanna Steel Co., and the Midvale Steel & Ordnance Co., Mr. McNeive said, he bought most of the commercial bars from the Carnegie Steel Co., with the Jones & Laughlin Steel Corporation and the Cambria Steel Co., coming next and about equal in importance as sources of supply. Carnegie and Bethlehem are the chief source of small shapes.

James C. Lenahan, purchasing agent for the Philadelphia plant of the Link Belt Co., Chicago, manufacturer of cranes, electric hoists, and conveying machinery of all kinds, said purchases consisted of bars, shapes, plates, sheets, and cold-rolled round bars. He said that he purchases from 1000 to 1500 tons of plates each year. Prior to the merger, he said, plates were bought from a number of companies, among them being those taken over by Bethlehem, while since the merger purchases were made from the same companies outside of the merger as before it took place, and from the Bethlehem Steel Corporation. Purchases of cold-rolled bars, Mr. Lenahan said, amount to about 500 to 1000 tons a year and were made prior to the acquisition from the Cambria Steel Co., Union Drawn Steel Co., the Columbia Steel Shafting Co., and the Jones & Laughlin Steel Corporation. On this line as well as others, it was shown that the company buys from numerous sources as it did before the merger.

Since the Federal Trade Commission order, Mr. Lenahan said, steel has been purchased at a delivered price with freight allowed.

"Has that change in method of quoting and billing

you resulted in any difference in cost to you?" asked Mr. Bane.

"No," the witness said. He added, however, that plates had been "pretty weak" and that up to six weeks ago he had been able to buy plates laid down at the Philadelphia plant at less than the Pittsburgh price plus freight. Since then, Mr. Lenahan declared, plates have gone back to the Pittsburgh price.

## Final Cost Not Different

Since the abolition of the Pittsburgh base, according to testimony given by Charles W. Hunt, assistant secretary of F. R. Phillips & Sons Co., structural steel merchant, with offices in Philadelphia, a great many mills quote f.o.b. mill, freight allowed to destination, but final cost at destination is really not different from a "substantial or set Pittsburgh basis plus the freight from Pittsburgh to destination." He said that his company prior to the merger bought shapes from Bethlehem and Lackawanna along with other companies and still purchased from Bethlehem and others. Plates were bought from Cambria among other companies before the merger and now are purchased from Bethlehem and other independent companies.

In the past year also, Mr. Hunt said, his company had bought approximately 10,000 tons of shapes and bars from Luxemburg and Germany. In reply to a question by Mr. Bane, the witness said the foreign steel could be purchased more cheaply than domestic steel.

"Could you get it inland to any extent cheaper than you could get domestic steel delivered at inland points?" inquired Mr. Bane.

"No, sir, we were held up to a point of probably 40 miles from the coast," replied Mr. Hunt.

"In other words, if I understand you correctly, it could be laid down cheaper at the seaboard to within 40 miles inland from the seaboard, but from that point the domestic steel is cheaper, is that correct?" asked Mr. Bane.

"Yes."

On cross-examination by Attorney Wood, the witness said that the steel purchased from Europe was sold proportionately about as follows: Philadelphia, 50 per cent; New York, 20 per cent; Baltimore, 10 per cent; Galveston, Tex., 15 per cent and the remaining 5 per cent to Boston, Jacksonville, Fla., and Savannah, Ga. Total shapes purchases in 1924, the witness said, amounted to about 16,000 tons, the 6000 tons of domestic steel coming from a number of companies.

Of its purchases, which amount to about 1000 tons a year, including bars, shapes and plates, the bulk is given and always was given to the Carnegie Steel Co. and the Bethlehem Steel Co., said Wallace N. Mayhew, a member of the firm of the Montgomery Iron & Steel Co., Philadelphia jobber.

More than 400 workers are covered for about \$600,000 of insurance under a plan of group life insurance recently provided by the Kansas City Structural Steel Co., Kansas City, Mo. Policies were issued on a cooperative basis with employer and employee joining in premium payment. Employees benefit to the extent of \$1,000 to \$3,000 insurance, arranged on a basis of monthly salaries. A disability clause guarantees to an employee the full payment of his coverage in case he becomes totally and permanently disabled before the age of 60.

The Midwest Forging Co., Chicago, is enlarging its works at Chicago Heights, Ill., by the addition of a steel building, 50 by 120 ft., for manufacturing purposes, a steel building for steel storage with crane service, 40 by 70 ft., and a warehouse, 40 by 120 ft. The structures will be occupied before the end of February. The new facilities, including additional machinery, are badly needed to take care of the company's present active operations and to provide for some additional capacity in the near future.

## MAY BE REPEALED

### Flexible Provisions of Tariff Law Becoming Unpopular—Chairman Green Will Act

WASHINGTON, Feb. 10.—Repeal of the flexible provisions of the Fordney-McCumber tariff act appears to be much more than a possibility. Ever since they have been in effect they have been the object of a great deal of criticism, and their constitutionality has been attacked in the courts. With this atmosphere surrounding them, along with previous talk of their repeal, there has now come from a high source the statement that their repeal will be sought. Such action, therefore, at the next Congress would come as no surprise. Indeed, there are many who confidently believe that these provisions will have their short lives brought to an end at that time without having developed what seems to be the prevailing opinion that they have accomplished little, if anything, constructive. Hailed originally as a wide departure from tariff making in the United States, it had been predicted by their proponents that they would go a long way toward taking the tariff out of politics. The principal supporter of the provisions was no less a man than the late President Harding, who insisted that they be written into the new tariff act.

But the advocate of their repeal also is an important source, and is Representative William R. Green, Republican, of Iowa, chairman of the powerful House Committee on Ways and Means, which has charge of originating tariff legislation. Mr. Green declared that he will urge repeal of the flexible provisions at the next Congress because they "have accomplished nothing and are detrimental to the usefulness of the commission." He insisted that the provisions, which authorize the President to increase or decrease duties, upon the recommendation of the commission, have failed to take the tariff out of politics. He said he favors restoring the tariff commission to its former position as a fact-finding body without the power to recommend changes

in rates, but solely with the power to assemble information to be submitted to Congress.

### The President's Position

President Coolidge, it is understood, holds that it has not been demonstrated the flexible provision is unworkable. He recognizes that difficulties have attended its workings, but believes, as a general proposition, it will be extremely helpful in the determination of rates and schedules based on differences between cost of production at home and abroad.

Perhaps the most dissatisfied group with relation to the working of the flexible provisions has been farm organizations, which long have asked that the provisions be repealed. The iron and steel industry's chief interest with regard to the provisions was shown in the filing by Eastern merchant blast furnace operators of a petition asking that the duty on pig iron be increased 50 per cent. An investigation was taken up by the iron and steel section of the Tariff Commission, but it covered only the domestic field and apparently has since then been abandoned. On other investigations little or no progress has been made, it is claimed, while some have been the subject of heated arguments in Congress and within the commission itself.

It was by reason of the criticism of the Tariff Commission that there had been talk in some quarters of abolishing it altogether. Such a background found expression recently when the House, largely through a vote by Democrats, adopted an amendment to the independent offices bill striking out the \$712,000 appropriation for the commission. The amendment was offered by Representative Gardner of Texas. Subsequently, when the Republicans rallied their forces, the appropriation was restored, as had been expected. The vote to strike out the appropriation, however, was accepted as proof of dissatisfaction with the Tariff Commission, much of which appears to be due to its operation of the flexible provisions. It is seriously doubted that either party would go to the extent of wiping out the commission itself.

## PRODUCTION REDUCED

### Steel Plant Operations in Youngstown District Are Sharply Curtailed

YOUNGSTOWN, Feb. 10.—This week, for the first time this year, production schedules of Mahoning Valley independent steel makers show rather sharp curtailment, especially in steel-making departments. Producers, however, say the recession will be of short duration and will likely be followed by broader production. They point out it is but a natural development, following the sustained high rates of output maintained the past three months.

Steel ingot production, heretofore maintained at 90 per cent, has declined to 70 per cent, with 35 of 52 independent open-hearth furnaces melting, while Bessemer steel output is at the same level with the independents.

There is no deviation in the production schedules

of Steel Corporation subsidiaries in the Mahoning and Shenango Valleys.

Sheet mill schedules also show a moderate recession, with 106 units rolling of 127 in the Valley, as compared with 108 the preceding week. A number of plants, however, are on a temporary five-day per week operating basis.

In merchant steel bar, plate, skelp, tube, strip, wire and tin plate mills there is no letdown.

Blast furnace activities also continue with little change, the current output representing 82 per cent of capacity.

Included in the active units are 29 tin plate mills being operated by the Trumbull Steel Co., and 14 sheet mills by the Republic Iron & Steel Co., at its Niles plant.

Fabricating interests are maintaining the schedules of recent weeks, and report that impending spring buying will result in broader output.

## South African Companies Merged

At a recent meeting of the debenture and shareholders of the Newcastle Iron & Steel Corporation of South Africa, Ltd., it was voted to amalgamate with the Union Steel Corporation of South Africa, Ltd. Under the terms of the merger the Union company makes a cash payment to the shareholders of the Newcastle corporation of £41,500 and two of the directors of the latter assume seats on the board of control of the Union Steel Corporation, headquarters of which are at Vereeniging, S. A.

Through the merger thus effected the fully equipped plant and properties of the Newcastle company, which has up until this time been financially unable to go ahead with production, will be placed in operation immediately.

Preliminary arrangements are also under way for

early extensions to both the Newcastle and the Vereeniging plants. John Malcolm is president of the Newcastle concern and the Union Corporation is controlled by the Lewis & Marks interests.

The Riverside works of the National Tube Co., at Benwood, (Wheeling), W. Va., which except for one of the two blast furnaces and the by-product coke plant has been idle for the past four months, resumed in all departments Feb. 9. This plant is used chiefly in making the butt weld sizes of pipe, demand for which has increased to a point where additional production has been found necessary. During the shutdown the company has made a number of improvements, among them the installation of a new coke conveyor and the modernizing of its No. 2 blast furnace, which probably will be blown in shortly.



# Emergency Plant Completed After War

Spectacular and Ambitious Wartime Ore Development in  
Italy Now in Operation—5-Mile Tunnel  
Used for Hauling Ore

**M**INING of ore at an altitude of 8500 ft., on a precipitous mountain top, is dramatically described in a report received by the Department of Commerce from Commercial Attaché H. C. MacLean, Rome. This remarkable performance was the outgrowth of the necessity of war. It was a huge and grim task faced by Italy, a country which is lacking in important easily accessible iron deposits.

High up in Northern Piedmont, near the French border, and cut off from any means of transportation, the Cogne mines were not attractive as a source of mining ore. They had been worked by primitive methods and the few tons of ore hauled nearly 20 miles to Aosta in carts. But failure met attempts to obtain capital necessary for work on a large scale. Investors were impressed by the vast engineering difficulties that had to be overcome and by the great cost of providing adequate transportation and were unwilling to risk the money. They also were skeptical because the ore deposits were believed to be limited to 5,000,000 or 6,000,000 tons, an amount too small to justify a large expenditure. But the war broke out, demand for iron and steel became urgent and the possibilities of the Cogne mines assumed a new importance.

With the encouragement of the government the Ansaldo Co., one of Italy's important manufacturers of iron and steel products, decided in 1916 to undertake the herculean task of developing the Cogne mines on a vast scale. The country needed steel and Ansaldo determined that steel should not lack. Expense was not considered. Production was the immediate aim.

## Success Hinged on Getting Ore to Smelter

The great problem, Mr. MacLean points out, was that of getting the ore to Aosta, the nearest point situated on a railroad line where manufacture could be carried on. The mines were high up in the mountains and the only access was a narrow winding gorge up which the construction of a railroad would have been a difficult and extremely costly undertaking. The only solution was to drive a long tunnel through the rocky barrier that stood in the way and this plan was adopted. At Aosta electric and blast furnaces and steel works, together with rolling mills, were planned, while mountain reservoirs operating hydro-electric plants were to furnish the enormous amount of current that would be required.

Work on all of these various undertakings, each by itself a difficult problem, yet essential to the success of the whole project, was begun promptly and was pushed. Among its other activities Ansaldo had embarked on a program of constructing 200 ships a year and the plant at Aosta was to furnish the plates, some 400,000 tons a year, which would mean, the report says, mining and smelting 1,000,000 tons of ore. But in spite of the disregard of cost, years were required for the completion of the long tunnel, which was not finished until 1922, and without the tunnel no large body of ore could be transported to the furnaces and no large scale operations were possible. Consequently the men who had planned the Cogne development never saw the realization of their hopes, for at the end of 1921 the Ansaldo Co. found itself in desperate financial straits on account of its too rapid expansion during the war and the subsequent world-wide industrial crisis.

## Diversion from Tonnage to Quality

However, only one course remained open, that of going ahead to protect the large amount of money already tied up. Reorganization was brought about with the old company a holding concern and the Societa-Cogne, in which the state became a stockholder to nearly half of the interest, took over the Cogne mines

and the steel plants at Aosta. After a careful study of the entire problem it was decided to abandon the original plan of a large scale production of basic steel products and, in view of the exceptionally high quality of the Cogne ore, ranging from 62 to 65 per cent metallic iron, to confine the activities of the company to the manufacture of special steels.

To this end a combination was made with M. Girod, a well-known French manufacturer, who was the inventor of an electric furnace and the owner of a plant making special steels at Ugines in Savoy. The Societa Cogne-Girod was organized in 1924 and the stock placed in the hands of trustees to prevent its control by either Italian or French interests. This company took over the steel works at Aosta, which, the report says, is operating. Activities of the Societa Ansaldo-Cogne will not go beyond the production of pig iron.

Describing a trip to the mines and their operations, Mr. MacLean says:

## Mines Nearly Inaccessible

"Branching off from the main road up the Val d'Aosta at Sarre, the road to Cogne turns sharply to the south and enters a deep valley shut in by towering crags up which it makes a steady ascent alongside a rushing torrent. After a climb of more than 2000 ft. it unexpectedly emerges into a delightfully fertile little plain surrounded by silver clad mountains, where the village of Cogne stands in the midst of green meadows which contrast sharply with the savage rocks above. At the base of the slope to the east are seen the mill buildings, storage bins and loading platforms which receive the ore as it comes from the mines, from which the eye naturally follows the lofty steel towers and slender cables of the long aerial ropeway that leads to the mouth of the mines proper, up almost to the summit of the mountain 3000 ft. above.

"Two routes to the mines offer themselves to visitors—a two-hour climb up a narrow, winding path on muleback or the direct air line via the temporary service ropeway used only for the transport of supplies and for those few passengers who prefer speed to safety. The main ropeway serves exclusively for carrying ore."

After describing the panoramic view from the mountain top, Mr. MacLean says that, turning from the beauties of nature, the visitor finds substantial concrete buildings which house the 300 men employed, half of them miners and the remainder engaged on new construction, etc. Comforts of all kinds and amusements are being provided for the workers, cut off from the world. Living quarters are under the same roof with the power plant, which is equipped with Ingersoll-Rand air compressors. The woodworking and repair shops open directly into the lower level of the mine, so that when the whole plant is complete and in operation there will be no necessity for the workers to expose themselves during inclement weather.

## To Work on Four Levels

Four levels eventually will be worked, with interior connections by means of inclines. The present operations are being carried on primarily with the object of determining more definitely the limit of the ore beds, which apparently constitute a great wedge running into the mountain on an angle reaching a thickness of more than 100 ft. The known deposits, the report says, are estimated to contain from 50,000,000 to 60,000,000 tons of ore. It is easy, Mr. MacLean points out, to furnish the 200 tons of ore daily needed to supply the existing furnaces, and there will be no difficulty in increasing the amount to the maximum of 1000 tons per day called for by the present program.

From the mine mouth a continuous procession of steel buckets, each carrying about 1750 lb. of ore, goes down the long cable of the ropeway to the mill far below. This ropeway, built before the war by a German manufacturer, is the highest in Europe and has a length of about 1½ miles.

On arrival at the mill the ore is first crushed and then magnetically separated, that containing more than 62 per cent of iron going to the storage bins and loading platforms, while the lower grade ore passes through a series of Hardinge mills by which it is reduced to powder and through magnetic separation of Swedish design. The ground ore is used in the blast furnaces in the form of an agglomerate.

#### Ore Goes Through 5-Mile Tunnel

The narrow-gage railroad that carries the ore from the mill has a total length of about 7½ miles, of which 5 miles is represented by the long tunnel driven straight through the rock of the mountains that separate Cogne from Aosta. Six years' time and many millions of money were required for the construction, but it is complete and provides easy and economical transportation. At present it is being operated with steam locomotives, but substitution of electric traction is planned. The tunnel at its further end opens on the hillside south of Aosta, whence a second ropeway about two miles long carries the ore down from a height of 3000 ft. above the town direct to the battery of electric furnaces, which are unique in Italy.

Up to the present only two blast furnaces of 50 tons daily capacity have been erected, but four additional furnaces of equal size will be constructed, which will give a total capacity of 300 tons of pig iron per day. The furnaces were originally built according to Swedish design, but certain modifications and improvements have been made in one of them, which is re-

ported to be operated with satisfactory results. Similar alterations in the other furnaces are under way. Both pig iron for steel manufacture and foundry iron are produced and when the plant is in full operation the iron will be delivered in a molten state from the blast furnaces direct to the adjoining steel works.

#### Treatment in Steel Plant

The main building of the steel plant is 1080 ft. long and is divided into two bays. The raw material enters at the end of one bay and passes across to the four 20-ton electric furnaces on the other side. From the molds in front of the furnaces the ingots go into gas-fired furnaces, thence to a rolling mill for the first treatment, proceeding subsequently in turn to a second set of furnaces, to the small rolls, and back up to the other bay for the finishing process, the report says. The whole layout is described as having been planned with a view to eliminating lost motion as far as possible. Adjacent to the steel works are a small plant for the making of ferroalloys, warehouses for the finished product and other accessory buildings, the whole group being situated a stone's throw from the railroad station of Aosta and the railroad line to Turin.

The special steels will be sold, according to present plans, in crude form. Every kind of special steel, including that for forging, stamping, machining, etc., the report says, will be produced. The four existing electric furnaces have a combined maximum capacity of approximately 300 tons per day, which Mr. MacLean says is far in excess of Italy's total requirements, so that the actual production will be considerably dependent upon the possibility of competing both in quality and price in the world's markets and on the development of an export business.

Seven powerplants, equipped to generate 60,000 hp., now are producing about one-half this amount.

#### What Keeps Up Railroad Rates

Operating expenses of railroads consist principally of the labor, material and supplies for which they pay. Dr. M. O. Lorenz, of the Interstate Commerce Commission, based a study upon a comparison of railway unit costs in the "test period" of three years ended June 30, 1917, and costs in the year 1923. His conclusions are quoted from *Railway Age*, as follows: "A special study indicates that 119 per cent may be taken as the increase in hourly wage cost from the test period to 1923. From the test period to 1923 the weighted average of prices for materials used by Class I roads during the test period increased 74½ per cent."

Dr. Lorenz includes in his study of the cost of rendering railway service "capital charges" which are represented by the net operating income available for paying interests and dividends. He uses one ton carried one mile as the unit of freight service and one passenger train car hauled one mile as the unit of passenger service. His study shows that between the test period and 1923 the operating cost of moving one ton of freight one mile increased from 5.1 mills to 9 mills, or almost 77 per cent. Taxes per unit of traffic handled were 75 per cent higher than in the test period. Capital charges for each ton of freight carried one mile declined from 1.986 mills to 1.746 mills, or 12.1 per cent.

The operating cost of moving a passenger car one mile in 1923 was 91½ per cent higher than in the test period and taxes were 89 per cent higher, while capital charges were 5½ per cent less.

#### Cost Increases Greater Than Rate Increases

Dr. Lorenz says: "The increase in operating expenses and taxes per ton mile is very marked, while the net railroad operating income available for capital charges shows on the same unit basis no increase in any district and in the western district a marked decline," amounting for each ton carried one mile to 24 per cent and for each passenger car moved one mile 16½ per cent.

In commenting *Railway Age* says: "The increases shown in unit operating costs and taxes assignable to

both freight and passenger service were much greater than the increases in average rates per ton per mile and per passenger mile received by the railroads. The average rate per ton mile in 1923 was about 56.5 per cent higher than in the test period and the average passenger rate about 49 per cent higher."

Arrangements have finally been completed for the consolidation of the Illinois Thresher Co. and the Sycamore Foundry Co. both of Sycamore, Ill., and the Robbins Machinery & Supply Co., Chicago, under the name Rumely-Robbins Co. William N. Rumely will be president and Hugh P. Robbins, vice-president and general manager. The Robbins Machinery & Supply Co. has been in the business of designing and furnishing elevators and labor-saving machinery for handling all classes of material, including machinery for handling coal, ashes, sand, gravel, stone and other bulky material, as well as special equipment for handling sugar beets, bags of sugar, boxes and barrels.

Weirton, Hancock County, W. Va., on the Panhandle division of the Pennsylvania Railroad, with about 15,000 inhabitants, supplied more freight in 1924 to the Pennsylvania system than any other station located on that division between Pittsburgh and Columbus. The freight station at Weirton handled during the year about 65,000 carloads of freight, giving a revenue of over \$5,000,000 to the Pennsylvania system. The main operations of the Weirton Steel Co. are carried on at Weirton.

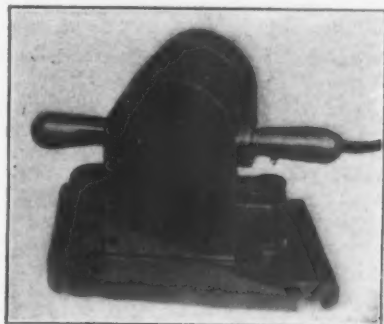
Machine tool catalogs, especially those likely to have technical and historical value, are being received in satisfactory numbers at the Engineering Society's Library, 29 West Thirty-ninth Street, New York. Dr. Harrison W. Craver, the librarian, is willing to receive all catalogs of this nature and probably also those of earlier days, all such being calculated to help in outlining the technical progress of the industry.



### Portable Electric Sander and Grinder

The doing of hand work at machine speed is a feature of the portable sanding and grinding machine here illustrated. The machine may be used on the bench or on the floor and takes its power from a light socket. Pressure on the spring handle engages the work, and with a slight push the machine rolls smoothly over the surface of the work. An eccentric clamp of improved design in the drum holds the sandpaper, which may be changed quickly.

R. L. Barker & Co., 642 West Washington Boulevard, Chicago, are the makers of the machine, which is designated as the model E. Gears and ball bearings are



Portable Sander for Bench or Floor Work. Abrasive paper may be applied and the machine used for flat grinding

entirely inclosed, and run in oil. The motor, which is also inclosed in a dust-proof compartment, is of universal type rating approximately 1/3 hp. It operates from any 110 volt circuit, but 220-volt motor can be provided if desired. The drum around which the sand or emery paper is clamped is dynamically balanced and all of these parts are inclosed in the upper housing. There is a base with rollers to guide the machine over the work, and between this and the upper power plant there is a very accurate screw adjustment for depth of cut, as well as a spring to relieve the pressure of the drum on the work when finishing sanding or grinding. The dust cover holds in the dust. Metal abrasive paper can be as easily applied as sandpaper and, therefore, the machine may be used for flat grinding as well as sanding.

### Instrument Litigation Settled Out of Court

The law suit brought by the Brown Instrument Co. in the Federal Court at Chicago against the Republic Flow Meters Co. and certain individuals has been settled between the parties; also certain suits brought by the Republic Flow Meters Co. and the same individuals in the same court against Richard P. Brown have been dismissed.

The officers of Republic Flow Meters Co. did not wish to be under the imputation of using illegally any of the original construction of the Brown Instrument Co. It having been called to their attention that patent applications were pending, on behalf of the Brown Instrument Co., covering some of these features, the Republic Flow Meters Co. has changed the construction of its indicating and recording pyrometers, to avoid infringement, either of patents or of original designs or construction of the Brown Instrument Co.

New Castle Works of the Carnegie Steel Co., which had the best lost time accident record of the Carnegie Steel Co. plants in December, repeated the performance in January and will be the plant first to hold the 1925 "safety first" trophy. While not a record, this plant completed 87 days without an accident to an employee that necessitated absence from work.

Mining and industrial electric locomotives shipped in 1924 are reported by the Department of Commerce at 655, compared with 1334 in 1923. The mining locomotives fell off from 1273 to 568, while the industrial locomotives increased from 61 to 87. The value of locomotives shipped was \$3,483,150 in 1924 and \$6,221,170 in 1923.

### Wire Rod Rate Revision to Be Considered

Proposal of the railroads to revise the present commodity tariff description of wire rods, which would automatically take some styles of rods out of the billet group of rates in the Central Freight Association and Trunk Line Association territories, is to be considered at a meeting to be held in rooms 10 and 11, Chamber of Commerce of Pittsburgh, Wednesday, Feb. 18. Call for the meeting, which has been made by A. R. Kennedy, traffic manager Pittsburgh Steel Co., has been sent to 68 producers and consumers of wire rods.

Briefly it is the contention of the railroads that flat, oval or otherwise shaped rods are not entitled to the billet rate of freight and they have indicated an intention to publish the following description of rods they would take at the billet rate of freight:

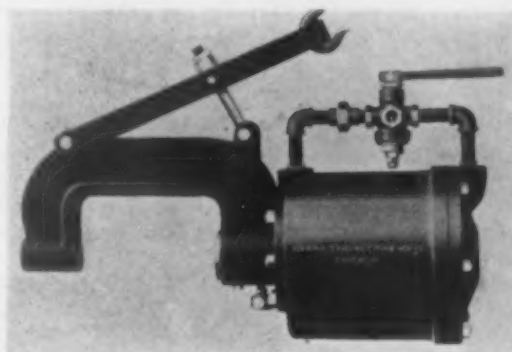
Rates apply on raw and unfinished material, rough hot-rolled and not smooth or surface finished, not drawn through a die, round shaped in cross-section, but not flat, oval or otherwise shaped, in coils, not in straight lengths, not less than No. 8 gage nor over 1 1/4 in. in diameter which can be transported on open cars without damage from the weather.

It will be observed that the intent of such a description is to confine the billet rate strictly to round rods and that users of rods rolled to other shapes would be called upon to pay the finished iron and steel products rates of freight. Nut makers use a good many hexagon rods and would be especially affected by the change.

### Straight-Acting Press for Riveting

A straight-acting pneumatic press, employed by a manufacturer of automobiles for riveting dust disks to rear axle assemblies and in other work, is shown in the accompanying illustration.

The machine has a capacity for driving 3/16-in. cold rivets and 1/4-in. hot rivets. It has a reach of 4 in. and the gap is 6 in. The cylinder, which is 12 1/4 in. in diameter, is capable of exerting five tons on the dies



Pneumatic Machine for Riveting Dust Disks and Similar Work. The reach is 4 in. and the gap 6 in.

at 100 lb. air pressure. The die stroke is 2 in. The weight of the machine, which has been placed on the market recently by the Hanna Engineering Works, 1765 Elston Avenue, Chicago, is 225 lb. net.

Employees of the Bethlehem Steel Corporation may subscribe to its 7 per cent cumulative preferred stock at \$100, under the Employees' Savings and Stock Ownership Plan. This is the second offering under the plan, the first having been made in January, 1924, at \$94. Subscriptions may be made at the rate of one share for \$400 of annual earnings. The company offers a bonus increasing to the fifth year, for holding shares obtained by the plan.

The Vulcan Mold & Iron Co., Latrobe, Pa., has bought the ingot mold business of the Bollinger-Andrews Construction Co., Verona, Pa., and is moving the equipment to Latrobe. The Bollinger-Andrews company hereafter will do solely a steel construction business.

# Rolling Mill Electric Operation

Compilation of Main Roll Drives in the United States and  
Canada by Class of Mill and Type of Connection—  
More Than 1,300,000 Hp. Represented

**A**BOUT 1100 main roll drives by electric motor are listed in the January number of *Iron and Steel Engineer*, Pittsburgh, in the first tabulation covering the large subject of electric drive in steel and other metal mills. The drives first are listed in one comprehensive group, arranged in order of horsepower, with a secondary classification as to speed in r.p.m. Then these same drives are listed again in subdivisions, showing the number of blooming mill drives, plate mill drives and so on through 15 or more groups. In each case the table shows the horsepower, r.p.m., voltage, cycles, type and size of mill, method of drive, date of purchase, name of purchaser and location of plant and maker of motor. After the groups have been disposed of, similar data are given for reversing mills, for a.c. speed sets, for direct current adjustable speed drives and for multi-speed drives. These latter items

at the Sparrows Point plant of the Bethlehem Steel Co. in 1919 to operate a 60-in. reversing universal plate mill by direct drive. The other is still older, having been placed in the Gary plant of the Illinois Steel Co. in 1916 to operate a 160-in. plate mill by direct drive. The earliest unit in the plate mill list is a 4000-hp. direct drive installed in 1905 at the South Chicago plant of the Illinois Steel Co. to operate a 36-in. reversing universal plate mill.

Rail and structural mills run from 400 to 8000 hp. The latter is a 28-in. rail mill using direct drive, installed in 1917 at the Lackawanna Steel Co. (now Bethlehem Steel Corporation). This and the blooming mill drive mentioned above are the only units of more than 7000 hp. in the list. The oldest drives in the rail and structural mill groups are four units installed in 1905. Two of these, of 1500 hp. each, are in the

Main Roll Drives in United States and Canada

Drive for (Mill)	Total			Direct		Geared		Coupled		Rope		Belt		Chain		Not Stated	
	No.	Hp.	Avg.	No.	Hp.	No.	Hp.	No.	Hp.	No.	Hp.	No.	Hp.	No.	Hp.	No.	Hp.
Blooming .....	31	128,450	4,144	23	108,900	7	15,550	1	4,000								
Plate .....	47	106,300	2,262	14	54,100	25	43,800	7	6,400	1	2,000						
Rail and structural	44	129,150	2,935	28	89,150	15	35,000	1	5,000								
Bar and billet....	125	191,435	1,531	23	68,550	78	108,385	10	5,750	6	5,100	2	850	5	2,400	1	400
Sheet bar and skelp	34	76,000	2,235	6	21,750	19	35,000	6	12,250	2	5,000	1	2,000				
Sheet and tin plate	108	144,450	1,337	1	700	78	106,900	8	9,600	16	21,250			1	1,500	4	4,500
Rod .....	36	47,760	1,327	10	7,680	18	28,475	2	4,500	2	2,900	4	4,205				
Piercing .....	18	15,050	836	4	3,050	8	8,200	3	1,100	3	2,700						
Tube rolling .....	55	28,940	526	6	4,750	31	13,700	16	8,290	1	1,200					1	1,000
Strip and hoop....	89	118,120	1,327	42	56,170	41	53,900	4	4,450	1	1,800	1	1,800				
Cold roll .....	71	29,725	419	2	600	65	26,675			4	2,450						
Merchant .....	202	165,260	818	67	45,675	91	88,035	10	10,350	21	14,400	7	4,600			6	2,200
Wire .....	31	15,575	502			13	5,775	9	6,300	3	1,700	5	1,500			1	300
Wheel .....	13	10,000	769	5	3,500	8	6,500										
Miscellaneous .....	28	16,650	595	2	1,200	10	6,350	5	3,400	2	600					9	5,100
Non-ferrous .....	176	89,450	508	6	3,800	141	72,200	8	3,800	3	1,700			2	1,000	16	6,950
Total .....	1,108	1,312,315	1,184	239	469,575	648	654,445	90	85,190	65	62,800	20	14,955	8	4,900	38	20,450
Average power....		1,184			1,965		1,010		947		966		748		613		539

duplicate what has preceded and hence do not enter into the totals.

Analysis of the data published in *Iron and Steel Engineer* gives the subjoined table. This shows the total number of drives under each class of mill, together with the total horsepower of these drives and their average horsepower, and then subdivides in each case, to show the number of direct connected drives, the number of geared, coupled, rope, belt and chain drives and a few where the character of drive was not stated. In each of these subdivisions the horsepower also is given.

While the special types of drives and speed sets at the end of the original tables are not covered in our table, it may be of interest to know that the reversing mill drives are 51 in number for a total of 175,650 hp. There are 111 a.c. speed sets listed, of a total of 140,630 hp.; 132 direct current adjustable speed sets, of a total of 126,935 hp., and 34 multi-speed drives aggregating 31,960 hp.

## Characteristics of Different Classes of Mills

Blooming mill drives range from 500 hp. to 8000 hp., this latter being an interrupted continuous blooming mill, geared, installed in 1923 by the Ford Motor Co. and taking current at the unusually high voltage of 13,200. It operates at 240 r.p.m. The earliest blooming mill drive in the list is the 500 hp. drive mentioned, which was installed in 1910 by the Sharon Steel Hoop Co. to run a 24-in. mill.

Plate mill drives range from 300 hp. to 7000 hp., there being two of the latter size. One was installed

Bessemer, Pa., plant of the Carnegie Steel Co. The two others, of 1800 hp. each, are at the South Chicago plant of the Illinois Steel Co. All four are direct connected to light rail mills.

## Billet Mills Date from 1907

Bar and billet mill drives range from 300 to 6250 hp., the latter being geared to a 24-in. continuous billet mill, operated at 368 r.p.m. and installed in 1922 by the Inland Steel Co., Indiana Harbor, Ind. Several installations of bar and billet mill drives were made in 1907. There were two geared units of 2000 hp. each, placed in the Illinois Steel Co. at Gary, for driving 40-in. billet mills, and three units of 6000 hp. each put into the same plant in the same year, but using direct drive on 32-in., 24-in. and 18-in. billet mills.

Sheet bar and skelp mill drives range from 350 to 6000 hp., the latter being a direct drive for an 18-in. sheet bar mill installed at Gary in 1910. The oldest units in this group were installed in 1908 at the Lorain plant of the National Tube Co., being two units of 2500 hp. each, operating skelp mills by rope drive. The speed is 184 r.p.m., and the voltage 6600.

Sheet and tin plate drives range from 300 to 2500 hp., the latter being a geared unit, installed in 1919 by the Wheeling Steel Corporation, Steubenville, Ohio. The oldest unit in this group and the only one preceding 1910 is of 1200-hp., installed in 1907 by the Seneca Iron & Steel Co., Buffalo, operating through rope drive a 26-in. sheet mill.

Rod mill drives range from 300 to 3000 hp., the latter being a coupled drive, installed at Steelton, Minn.,



by the Minnesota Steel Co. in 1920, to operate a wire rod mill. The oldest units in this group are three, installed in 1910 by the American Steel & Wire Co., Birmingham. Two are rope drives of 1300 and 1600 hp. for rod finishing mills, while the other is a gear drive of 2600 hp. for a rod roughing mill.

#### Miscellaneous Mills

Piercing mill drives range from 300 to 2500 hp., the earliest unit having been installed in 1912. Tube rolling mill drives range from 300 to 1800 hp., the earliest units having been installed in 1906 by the National Tube Co. at McKeesport, Pa. Strip and hoop mill drives range from 300 to 5500 hp., the latter being a direct drive at Gary, dated 1920, and operating a 20-in. hot strip mill. The earliest units in this group were three installed by the American Steel & Wire Co. at Cleveland, in 1907. Cold roll drives range from 300 to 1200 hp., the earliest unit dating from 1909 at the Weirton Steel Co., Weirton, W. Va.

Merchant mill drives, 202, the most numerous of all, range from 300 to 4500 hp. In the latter size are two units installed in 1923, each being geared to a 14-in. merchant mill and located respectively in the plants of the Ford Motor Co. and the Inland Steel Co. The earliest merchant mill drives in the list are two installed in 1905 by the Ontario Iron & Steel Co., Welland, Ont., both being rope drives. One of them, of 500 hp., operates a 12-in. merchant mill, while the other, of 800 hp., operates a 22-in. merchant mill.

#### Wire, Wheel and Non-Ferrous Mills

Wire mill drives range from 300 to 1500 hp., the three earliest having been installed in 1908 by the Pittsburgh Steel Co., Monessen, Pa., these being of 350 hp.

each, coupled to wire drawing benches. Wheel mills range from 300 to 2000 hp., the earliest being a 900-hp. geared unit, installed in 1906 at Johnstown, Pa., by what is now the Bethlehem Steel Corporation.

Aluminum, brass, copper and other non-ferrous mill drives form the second largest group in point of number but, as the average size is relatively low, this group stands eighth in point of total horsepower. The 176 units range from 300 to 1350 hp. Apparently the non-ferrous industries were much slower to adopt electric drive than the steel industry, for the first installations listed were made in 1913 by the Scovill Mfg. Co., Waterbury, Conn. In that year five geared drives of 500 hp. each were put in to operate brass mills.

#### Grouped by Size and Date

Classifying the 1108 drives by size, about 60 per cent are of under 1000 hp. and only 9 per cent of 3000 hp. or more. Of the total, 317 are under 500 hp.; 354 are 500 or more, but under 1000; 131 are from 1000 to 1499, 133 from 1500 to 1999, 74 from 2000 to 2999, 38 from 3000 to 3999, 18 from 4000 to 4999 and 43 of 5000 hp. and over. While only 9 per cent in number are of 3000 hp. and upward, the ratio of total power in this upper range is considerably greater, being 34 per cent, while the 60 per cent of the total number below 1000 hp. represents only 26 per cent in the total power.

Of the whole number, seven date from 1905, nine from 1906, nine from 1907 and eight from 1908. Altogether, 177 date from 1913 or earlier, 372 from 1914 to 1918 inclusive and 493 from 1919 to 1924 inclusive. In the cases of 66 no dates are given. The largest year was 1920, with 121 drivers ordered, followed by 1916 with 115, 1919 with 110 and 1914 with 99. After the slump to 38 in 1921, a recovery was made to 84 in 1922, 70 in 1923 and 70 in 1924.

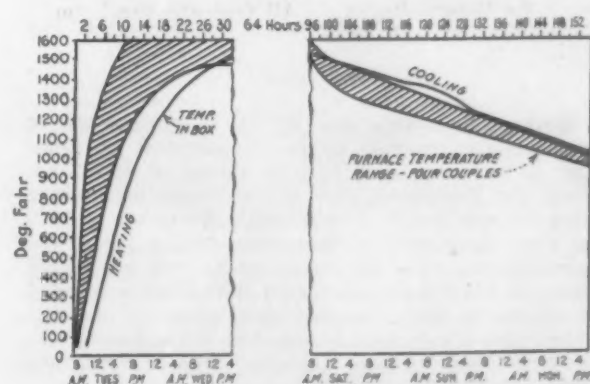
## Annealing Malleable Cast Iron

### Test to Determine the Effect of Rapid Heating—Some Quick Results Under Special Conditions

BY S. J. FELTON\*

THE results of a test on a 5000-lb. over-fired, side combustion chamber annealing furnace, burning oil as a fuel, is given in the accompanying chart. The oil had a specific gravity of 0.879, and was supplied to a No. 3A Maxon Premix gas and oil burner, at a pres-

A long calibrated thermocouple extended through the furnace wall with the hot end in the center of one of the boxes. A tapalogue with four couples was used to record furnace temperatures. The castings averaged 0.90 per cent Si., 2.50 per cent C., 0.04 per cent S., 0.20 per cent Mn., and 0.17 per cent P., and were packed in burned out mill scale. A summary of results is as follows:



The Various Stages in the Experiment Graphically Presented

sure of 60 lb. and a temperature of 210 deg. Fahr. Because of the more rapid heating obtainable, a saving of over five hours per run was obtained when oil was used as a fuel. The average of a large number of tests indicates the consumption of 334 gal. of oil per ton of castings, as against 29,000 cu. ft. of natural gas per ton when this medium was used.

The main reason for this test was to determine whether the castings were being heated too rapidly.

\*Ohio Mechanics Institute, Cincinnati.

Cooling Rate		Temp. inside box	
Furnace Temp. (high couple)			
34 hr. from 1620 to 1200, or 12.3 deg. per hr.		36 hr. from 1520 to 1200, or 8.9 deg. per hr.	
24 hr. from 1200 to 1000, or 8.3 deg. per hr.		24 hr., or 8.3 deg. per hr.	
Total cooling rate			
58 hr. from 1620 to 1000, or 10.7 deg. per hr.		60 hr. from 1520 to 1000, or 8.7 deg. per hr.	

It will be noted that the castings reached 1520 deg. Fahr. 22 hr. after the highest tapalogue couple reached 1600 deg. Fahr. On cooling, the slope of the inside box temperature curve is less than the furnace temperature slope, because of retardation, caused by heat evolution from the precipitation of pro-eutectoid graphite. From 1350 to 1200 deg. Fahr. the eutectoid graphite precipitation causes a hump in the cooling curve. From 1200 deg. Fahr. down, the box and furnace temperature curves are practically parallel.

It should be understood that with different furnaces, packing materials and boxes, the curves might be quite different. One of the conclusions of this test was that in this particular furnace, the doors could be removed with safety at a furnace temperature of 1150 deg. Fahr.

#### Annealing Time

The present rather tedious methods of annealing malleable iron are largely necessary because of the oxidation of carbon from the exterior of the castings

in the commercial annealing process. The lower carbon exteriors graphitize with much more difficulty than the normal centers of castings; therefore, the annealing time must be adjusted to this condition. Ordinarily, if the time is shortened, pearlitic picture frames result. If the neutral atmospheres used in laboratory annealing tests could be utilized in commercial furnaces, the carbon content would remain uniform from edge to center of the casting and thus quicker anneals and lower total carbons should be feasible.

In the discussions of annealing time, the point seems to be overlooked that in commercial work one is sometimes able to cut the annealing time considerably without affecting the quality of the castings. Although there is no chemical reason for this condition, it must be admitted that some castings will anneal much more quickly than others of seemingly identical composition.

### John Ericsson Society Officers

At the annual meeting of the Captain John Ericsson Memorial Society of Engineers, held at the Engineers' Club in New York Jan. 31, the following officers were elected for the ensuing year: Capt. A. P. Lundin, president; Thomas Towne, first vice-president; Alfred W. Kiddle, second vice-president; Col. Philip T. Dodge, second vice-president; Erik A. Lof, second vice-president; Gust Pers Wern, treasurer; S. Theodore Thygeson, secretary; Gustaf Thyberg, financial secretary. The membership committee consists of Gust Pers Wern, Frank Mossberg, John Skogmark, K. H. Nilsson, John E. Franzen and Dr. B. H. Briloth.

This society has a membership of 500 engineers in America and Europe.

### To Build Cement Plant

Quarries and plant site of the Yosemite Portland Cement Co., Fresno, Cal., have been taken over by the recently incorporated Yosemite Portland Cement Corporation, which plans to erect a modern cement manufacturing plant having a capacity of approximately 2000 bbl. per day. The company plans to construct through its own facilities and will be in the market for materials and equipment. This will be the only cement plant in the San Joaquin Valley. Its capitalization is \$1,500,000. A. Emory Wishon is president; Murray Bourne, secretary, both of Fresno, and these together with W. H. Sutherland, Clyde Waterman and John B. Olcese are the directors. Besides road building and the increased demand for cement and industrial activities, the company's output will be absorbed by the large construction program in the irrigation district and the extensive power development planned in that district.

### Remodeling Mayville Blast Furnace

Extensive remodeling work and other improvements will be made at blast furnace A of the Mayville Iron Co., Mayville, Wis. The furnace, which is at present bucket fill, will be converted to a skip-filled furnace equipped with a McKee revolving distributor and electrically operated bell rigs. Improvements will be made to the existing ore and coke bins and the latter will be provided with McKee cascade type screens. The contract for the work has been placed with the Arthur C. McKee & Co., engineer and contractor, Cleveland, by the Youngstown Sheet & Tube Co., Youngstown, owner of the Mayville furnaces.

President Julius Kahn of the Truscon Steel Co., Youngstown, Ohio, announces plans are being developed for construction of a fabricating warehouse at San Francisco to serve as a distributing center for the company's increasing trade on the coast. Mr. Kahn has just returned from a trip to the Pacific Coast, and reports the trade outlook bright, but declares buying has been retarded because of prolonged cold weather interfering with outside construction.

One hesitates to cast a spell of mystery over the subject, but some old time practical annealers appear to be able to judge the progress of graphitization by observing furnace conditions, and are thus able to hurry up some ovens and retard others with satisfactory results. They explain that there is a certain haze in the furnace when graphite is being precipitated. Thinking that this haze might be the result of a gaseous emanation from the castings, one of the writer's former students at the University of Cincinnati, Lester Crome, performed some research which indicated that gravimetric sulphur decreased during the annealing process. This subject is still not quite clear, however.

In conclusion, the writer wishes to give acknowledgment to G. K. Elliott, chief metallurgist, Lunkensheimer Co., Cincinnati, who supervised the test on the annealing furnace.

### Statistical Abstract of the United States—1923

This official American handbook of statistics, which has been issued annually by the Department of Commerce for some years, contains in the present volume 878 pages and is issued through the Government Printing Office, Washington, for 85c. The book has been revised this year, containing much more data than before, but further condensed so that the number of pages has not been much increased. The additional material relates largely to industry and commerce.

Among the main divisions of information contained are 130 pages about manufactures, mining and forest industries, covering capital, value of products, wage earners and wages, prices, consumption, etc.; 105 pages on agriculture; 60 pages on transportation, including railroads, electric railways, internal waterways, merchant marine, etc.; 120 pages on foreign trade; census statistics of population covering the nation, the different States, the principal cities and giving particulars of race, nationality, sex, age, urban and rural distribution, etc. Immigration, education, telephone and telegraph, electric light and power, wholesale and retail prices, finances and public debts of national, State and local governments and many other items of information are contained within the volume.

One of the most impressive features consists in a tabulation by years from 1800 to 1923 of a great variety of information affecting the United States and the activities of its inhabitants. This covers 60 pages, giving the information for every year since 1870, with data every 10 or five years preceding 1870. This section is a summary of the most important items of information covered in larger array in the rest of the book.

Mechanical stokers sold by 13 establishments in December are reported by the Department of Commerce to have numbered 91 with a total of 31,732 hp. Except for September, this is the lowest horsepower rating for any month of 1924, while November of 1923 was the only month in that year falling below the present figure. For the entire year, 1924 gave 1128 stokers of 514,279 hp., compared with 1464 stokers of 730,446 hp. in 1923. In each case about 85 per cent of the number and about 95 per cent of the horsepower rating covered stokers installed under watertube boilers.

The Chicago Foundrymen's Club at a recent meeting elected officers and new directors for the coming year as follows: President, G. P. Fisher, Whiting Corporation, Harvey, Ill.; vice-president, Alex Dapogny, Chicago Steel Foundry Co., Chicago; secretary-treasurer, G. L. Lacher, THE IRON AGE, Chicago; directors, A. C. Miner, Griffin Wheel Co., Chicago; Nick Hanck, Ferguson & Lange Foundry Co., Chicago; Roy M. Kinder, Miehle Printing Press & Mfg. Co., Chicago; Gottfrid Olson, Illinois Malleable Iron Co., Chicago.



## SAVING BY SIMPLIFYING

### Reducing Sheet Steel Varieties Estimated to Cut \$2,500,000 Yearly from Cost

WASHINGTON, Feb. 10.—Simplification of varieties of sheet steel, the third of the 11 principal products of the steel group, foreshadows a saving of more than \$2,500,000 annually to the industry, according to an estimate furnished to the Division of Simplified Practice, Department of Commerce, by Walter C. Carroll, vice-president Inland Steel Co., Chicago. Mr. Carroll was a leading figure in the movement to reduce the variety of sheet steel sizes. In the forthcoming booklet in the division's "Elimination of Waste" series, dealing with this simplification, it is pointed out by Mr. Carroll that 35 manufacturing companies having 686 mills are affected. The production involved is 5,000,000 net tons annually.

It is explained that sheet steel has a widely varied demand, ranging from the automobile industry, which

is stated to consume 37 per cent, down to the casket and vault industry, in which the demand is less than 1 per cent. The distribution of sheet steel by jobbers is some 13 per cent of the production, ranking second only to the automobile industry.

Mr. Carroll points out that 85 per cent of the demand was for 15 per cent of the sizes manufactured before the simplification program was undertaken. In the field of one-pass cold rolled and box annealed steel, 72 per cent of the demand was in 43 of 434 numbers made. In blue annealed sheets, 70 per cent of the demand was in 52 of 523 numbers made. In galvanized sheets 71 per cent was for 110 of 673 items made, while in galvanized roofing, 97 per cent of the demand was for 38 of the 142 varieties made. Eighty per cent of the demand in painted roofing was for six of the 47 numbers made.

Warehousing of the 1819 varieties made has been a huge expense for the distributor, it is pointed out, and if the sizes had been reduced by but 50 per cent the saving would have been \$2,500,000 annually.

## CONDITIONS IMPROVING

### More Employment in Iron and Steel Industries in Pennsylvania

HARRISBURG, PA., Feb. 9.—The semi-monthly report of labor conditions in Pennsylvania to Richard H. Lansburgh, Secretary of Labor and Industry, for the period ended Jan. 31, indicates that iron and steel plant conditions generally are improving.

Pittsburgh reports that the demand for workers is on the upward trend, while Philadelphia declares that conditions are good, with some major industries expecting much better conditions during the latter part of March. The more important zones of the State also find conditions good.

Elaborating on its statement, the Pittsburgh office says that many workers have been recalled. There continues to be a surplus of machinists, machine hands, factory men, handy men and helpers. "This condition," it was claimed, "will soon right itself once things open up on the broad scale that is characteristic of this district in even normal times."

The Baldwin Locomotive Works, the Philadelphia report says, expects renewed activity the latter part of March after having experienced a year of comparative inactivity. These conditions are now reflected in the pattern room business and orders for castings. The J. G. Brill Car Co., now employing only 900 men, as compared with 1300 a year ago, with the present em-

ployees working only two and three days a week, believes indications for early improvement to be excellent. The Sun Shipbuilding Co., the New York Shipbuilding Co. and the Navy Yard have added employees. Reports of moderate layoffs have been received from the Victor talking machine and Atwater Kent plants.

Mills in the Harrisburg district are working fairly well, with the larger ones experiencing more prosperous circumstances than the smaller ones. Conditions in the latter, however, are encouraging. The demand for workers is fairly good, with most mills having ample orders on hand. Improved business is reported in the Reading district. Allentown finds conditions continuing to improve, with some mills unable to get the experienced help that they require.

Some Erie plants are finding difficulty in obtaining machinists and molders "because the specifications are so strict and the wages so low." There has been little change in conditions during the month. Little change is noted in the basis of operations in the Johnstown district, which reports that improvements and additions to the plant of the Bethlehem Steel Co. are proceeding at a satisfactory rate. Williamsport finds that most of its foundries and machine shops are operating on a full time basis.

Conditions in DuBois are described as being steady, with prospects for additions in the number of men employed before long. The situation is said to be slowly righting itself in the Oil City territory, although there is a surplus of skilled mechanics.

## NEW PRICES UNTESTED

### Youngstown Producers Believe, However, Schedules Will Be Maintained

YOUNGSTOWN, Feb. 10.—District steel makers say there is no cause for apprehension because of some current slackening in the release of specifications against contracts and moderation in new buying. This is but a natural result of the high production rate consistently maintained for the past three months, they say.

Producers are confident the price advances announced in recent weeks, averaging \$2 per ton, and affecting black, blue annealed and galvanized sheets, merchant steel bars, plates and wire products, will withstand the pressure of consumers for lower quotations. For one reason, they point out current selling prices are from \$7 to \$10 per ton below those prevailing a year ago, and costs have advanced in the meantime.

Any price concessions which have lately developed affect only a small proportion of the total tonnage, say makers, and are therefore relatively unimportant. Reports of price cutting, though, have caused some un-

easiness and hesitation on the part of buyers, in some cases. It is felt here the steel business will receive a satisfactory volume of orders for second quarter delivery, amply sufficient to sustain the advanced prices.

The Youngstown Sheet & Tube Co. has officially marked up bars and plates \$2 per ton, to a base of 2.20c. per lb., Pittsburgh, and likewise wire and wire products.

For the present there is comparatively little buying of scrap metals in this district. Heavy melting has sagged from a recent high of \$23 to a range of \$20 to \$20.50, with melters still buying cautiously. The melting interests point out, however, that the price differential between heavy melting and basic pig iron has been restored through declines in the scrap market, and there will be a tendency in consequence to increase the scrap content in the open-hearth mix.

Sheet makers in the Mahoning Valley are well obligated over the remainder of the first quarter, and virtually all shipments of course will be made at prices considerably below the current nominal market. Second quarter buying will develop within a short time, when the advanced quotations will receive some adequate test.

## SITUATION IN FOREIGN TRADE

1. In recent months the trend in our foreign trade has been toward decreasing exports and increasing imports. This trend is likely to continue for some months.

2. Most important foreign exchanges have strengthened and are becoming more stable, which in the long run will benefit commerce.

3. More immediately, however, following the period of rising exchanges and stabilization of foreign currencies, there is likely to be a period of readjustment in this country, with falling prices and forced cost reductions.

4. Gold exports in excess of imports now exist and will continue for some months. The movement has not yet been sufficient to affect our gold reserves materially.

5. Exports of iron and steel are on the decline, while imports—especially of iron and scrap—are gaining.

6. European pig iron production has increased rather steadily since the war. In 1924 the leading countries increased their output over 1923, with the exception of Great Britain.

BY DR. LEWIS H. HANEY

Director, New York University Bureau of Business Research

### Trend of Imports and Exports

AS shown in Fig. 1 the present tendencies of the exports and imports of the United States merchandise are divergent, with imports gaining.

Compared with the average for 1921, the total value of our merchandise imports is high, while the value of exports is low. In fact, imports are much greater than in 1921, while exports are not much changed.

It is notable, too, that there has been a general upward trend in imports which is very clearly marked, taking the last four years into consideration. On the other hand the trend of exports during the same period has been rather uncertain. While it seems reasonable to say that there has been a small upward tendency, the rate of gain has been much less than in the case of imports. This is the more noticeable in view of the heavy exports of grain and cotton at high values which have occurred in the second half of 1924.

At the end of 1924 it is apparent that imports were rising sharply, while exports were falling with equal sharpness. As the indexes shown in Fig. 1 have been adjusted to eliminate the usual seasonal variation, it is believed that the curves show the true trend. In December the adjusted value of imports was \$46,000,000 over December a year ago and was the largest since May, 1923.

The general situation thus revealed is what might be expected on the basis of economic analysis.

With costs high in this country and prices rapidly advancing, we are in a better position to attract merchandise from foreign countries than we are to sell to them. Moreover, as has often been pointed out, the long-run effect of our position as a creditor nation must be to encourage imports to a greater extent than exports. It is probable that

### Trend of Foreign Exchange

WHEN all the rates of foreign exchange for the countries with which the United States trades are averaged, each being given a weight in proportion to the importance of the commerce involved, it

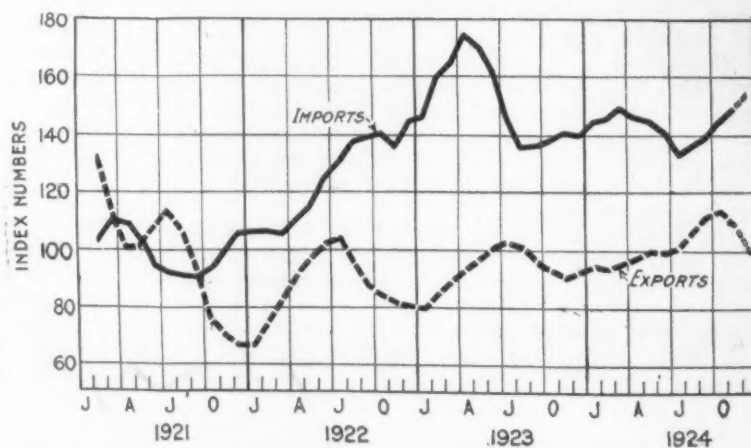


Fig. 1—Trend of Total Merchandise Exports and Imports as Measured in Dollars

The curves represent the trend of a 3-month moving average of the index of the value of exports and imports as reported by the Bureau of Foreign and Domestic Commerce. The December index is for the single month

further gains in imports will be made, not only for the reason given, but because the movement of imports generally follows very closely the trend of the business cycle, which trend is at present upward. The outlook for exports, on the other hand, is not good. The export movement has been helped recently by the rise in foreign exchange rates (see Fig. 2), but in view of the high costs and prices here and the recovery of European industry, expansion of our total foreign sales will be very difficult.

is found that during recent months conditions have been remarkably stable. During the four months ended November, the index for the average of all the exchanges remained unchanged. Judging by the trend of exchange rates for the separate countries (shown in Fig. 2), the condition of general stability has continued to date. This is a desirable condition, since the constant fluctuation in exchange rates since the war has been a disturbing factor and has hindered the normal development of foreign trade.



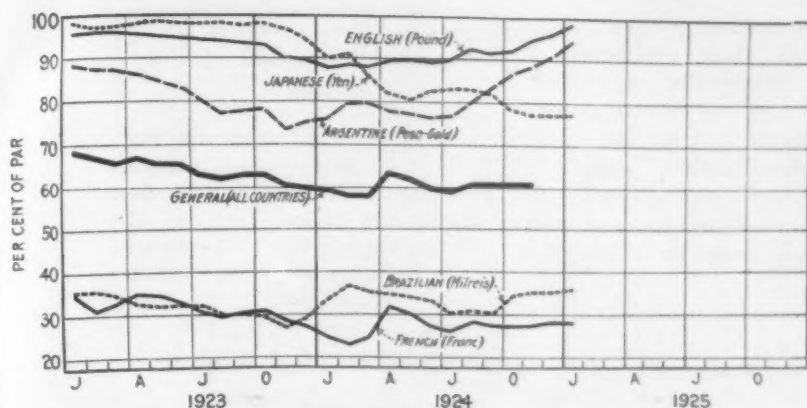


Fig. 2—Trend of Foreign Exchange Rates

The curves are based on treasury figures as compiled by the Federal Reserve Board. All exchanges are in terms of the dollar. The curves show the movement of exchanges figured as percentages of their respective pars.

Probably the outstanding fact is the large and steady advance of the pound sterling which is now only about 2 per cent below par. The exchanges of the leading South American countries have also moved upward and the Argentine gold peso is approaching par.

The other exchanges shown were steady at the end. The decline in the Japanese yen, which has marked the less advantageous industrial condition in Japan, has now apparently been checked, and the French franc seems to be rather definitely "pegged."

Dutch and Swiss exchanges are at or near par; German and Polish exchanges have been stabilized on a new basis; the exchanges of Hungary and Czecho-Slovakia are practically stable.

The general stable or rising trend in foreign exchange rates during recent months is to be explained on three grounds:

- (1) Low money rates here.
- (2) Confidence in foreign conditions.
- (3) Large foreign loans.

The net result of these factors is to cause relative appreciation of foreign currencies and a movement of gold away from this country.

Gold imports have at last been clearly checked and gold exports have grown rapidly. In December exports of gold totaled approximately 40 million dollars, while gold imports were only 10 million dollars, leaving a net export of approximately 30 million dollars. This is the first monthly excess of gold exports since August, 1920. The export excess has continued down to date.

As yet the drain has not been sufficient to reduce our gold supply materially, but it may become so before many months, particularly if domestic requirements are increased by further business expansion.

The recovery and stabilization of foreign exchange rates will ultimately benefit our foreign trade, but it must be recognized that there are at least three stages in the process of adjustment which has been going on in the last year or two:

(1) Rising foreign exchange, with relatively low domestic prices and money rates, a condition which gives advantage to foreign buyers and helps our exports temporarily.

(2) A period of stabilized foreign exchange, with continued low interest rates and high prices here, which tends to check our exports.

(3) Final readjustment in prices and money rates here, leading ul-

timately to a normal basis of foreign trade, by which all countries will benefit. Such a readjustment means first higher interest rates and then lower costs and prices. We are now in the second stage.

### Exports of Iron and Steel

THE trend of total iron and steel exports (shown in Fig. 3) has been downward since May, 1923.

The direction of this curve is determined chiefly by the trend of finished steel exports, which make up the bulk of the total. Semi-finished steel and pig iron and scrap form but a minor part.

Pig iron and scrap exports moved upward during the first half of 1924, while prices in this country were declining. During the second half of the year exports declined as prices rose here. December scrap exports were double the November figure, and recent price declines here may indicate that sellers of old material will be forced to turn to foreign markets to an increasing extent.

Conditions are not favorable for an increase in iron and steel exports, since prices here are high compared with what they are in Europe.

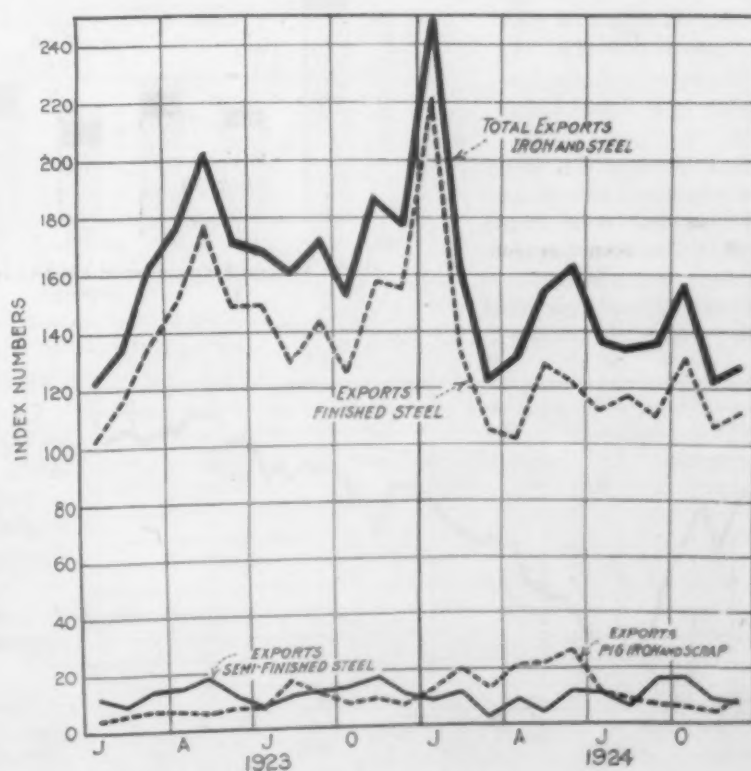


Fig. 3—Trend of Iron and Steel Exports

Based on data by THE IRON AGE from reports of the Bureau of Foreign and Domestic Commerce

## Imports of Iron and Steel

THE trend of our total imports of iron and steel has been upward since November, 1923, as is indicated in Fig. 4.

While the quantity of finished

have a somewhat greater significance than their percentage of our total consumption would indicate, since they are confined largely to the seaboard and are due to the general price situation. In spite of rising foreign exchange rates, the foreign markets for iron and steel are so much lower than ours that

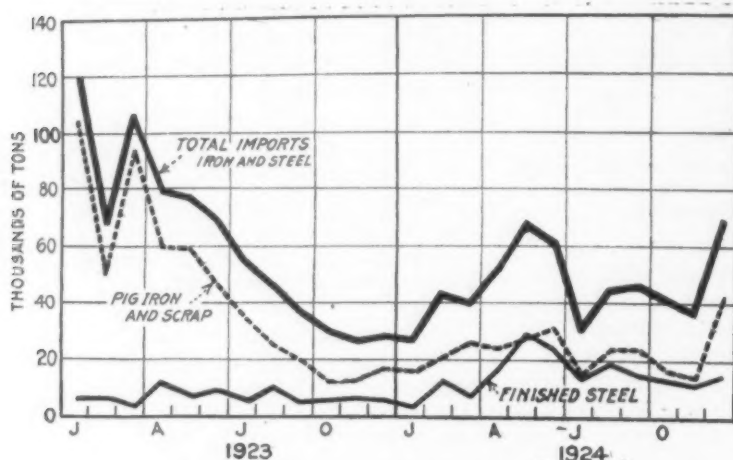


Fig. 4—Trend of Iron and Steel Imports

Based on data by THE IRON AGE from reports of the Bureau of Foreign and Domestic Commerce

steel imported is a relatively small percentage of the total imports of iron and steel, it has shown a general upward trend and is a considerably larger percentage of the total than it was in 1923.

In December, 1924, the rise in the total quantity of iron and steel imported was sharp, and this was also true of the imports of pig iron and scrap. Imports of finished steel gained slightly.

The combined imports of iron and steel are a very small percentage of the total consumption in this country, though in December the imports of iron were in the neighborhood of 1 per cent of our iron production. The imports, however,

imports are growing and are exercising some effect, on the seaboard at least.

## Foreign Production of Pig Iron

THE total production of pig iron in the chief foreign producing countries has not yet regained the level reached in 1913. The output, both in Germany and Great Britain, is much below that level; while Belgium produced slightly more and France turned out a much larger quantity.

The trend since the war, however, has been toward a gain in foreign iron production. It is true that English iron producers have been rather hard hit and that their production in 1924 was apparently less than in any year shown, with the exception of 1921 and 1922. Belgium and France, however, have gained rather steadily and their combined output in 1924 was nearly 12.3 million tons against 9.6 million tons in 1913. Germany, too, showed recovery from 1919 to 1922 and, although a slump came in 1923, the estimated 1924 output shows a considerable gain and is larger than in 1920.

Evidently European iron production is on the upgrade and competition in foreign markets may be expected to increase.

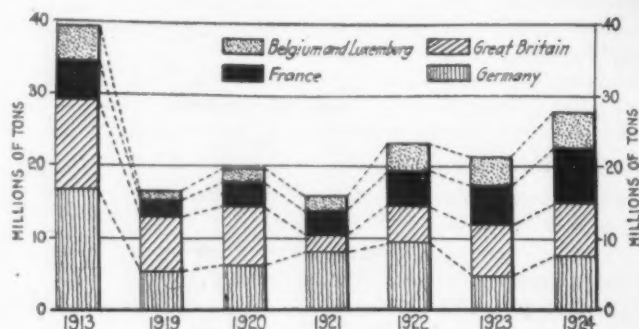


Fig. 5—Annual Production of Pig Iron In the Leading Foreign Countries

Data compiled from trade sources. The 1924 figures are estimated

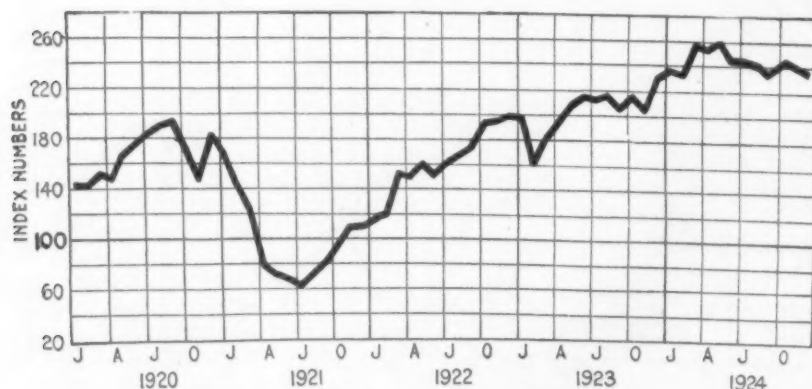


Fig. 6—Monthly Production of Pig Iron In Foreign Countries

The trend of the combined monthly outputs for England, France, Belgium and Luxembourg, and Canada

This conclusion is emphasized by an examination of the curve shown in Fig. 6, which indicates the monthly trend of pig iron production in England, France, Belgium, and Canada. If figures were available for Germany, the upward trend of the curve would be more marked, especially in 1924.

Canada took 30.5 per cent of the total United States exports of iron and steel in 1924; Japan took 15.3 per cent; Cuba, 9.1 per cent and Mexico 6 per cent. Europe, as a whole, took 5.8 per cent.



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Forty per cent saving in weight possible by using alloy steel castings in place of carbon steel castings for certain purposes. Saving in cost estimated at 10 per cent.—Page 470.

January steel output 154,796 gross tons per day, 13.3 per cent gain over December and higher than any month in 1924 except peak month of March.—Page 504.

In club car conversation economist talks of fallacy of Europe's claim that America profited by the war, and that war debts should accordingly be canceled.—Page 503.

The period business is approaching is one of higher interest rates and then lower costs and prices, economist declares.—Page 493.

Direct process of making stainless iron cuts cost in half by using chrome ore instead of ferrochrome.—Page 479.

Aerial ropeway transports ore half mile down mountainside from mountain top iron mine.—Page 485.

Reduction in varieties of steel sheets estimated to save quarter billion dollars yearly.—Page 491.

Flexible provision of tariff act may be rescinded.—Page 484.

Unfilled orders of Steel Corporation 5,037,323 tons on Jan. 31, highest since August, 1923.—Page 500.

Car wheel foundry finds soda ash an excellent desulphurizer of gray iron, removing one-third the sulphur content.—Page 473.

Imported steel could be delivered 40 miles from Atlantic Coast in competition with domestic steel, jobber testifies.—Page 483.

Disston makes \$75,000 saving in insurance premiums during nine years by low accident rate resulting from persistent safety campaign.—Page 504.

Alleged agreement between German iron and steel producers and consumers provides for a price rebate on material used in exported goods. This would permit German goods being sold cheaper abroad than at home.—Page 508.

Egg-shaped blast furnace is proposed, to eliminate center area of non-combustion existing in present circular construction.—Page 476.

Increase in railroad costs considerably higher than rate advances, I. C. C. expert finds.—Page 486.

"With costs high in this country and prices rapidly advancing, we are in a better position to attract merchandise from foreign countries than we are to sell to them."—Page 492.

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## GERMAN STEEL SHIPMENTS

Exports Exceed Imports by 570,000 Tons, of Which Scrap Accounts for 332,000 Tons

BERLIN, GERMANY, Jan. 26.—Imports and exports in the first eleven months of 1924 were, in metric tons:

	Imports	Exports
Iron, steel and wares thereof (machinery excepted) ...	1,027,582	1,599,145
Of which—		
Pig iron .....	212,318	44,167
Scrap .....	31,246	363,766
Ingots, blooms, etc.....	93,274	25,692
Bars, profiles, etc.....	357,870	188,403
Sheets .....	86,596	163,435
Wire .....	40,374	139,715
Machinery .....	10,744	241,250

The "active" balance continues to be maintained, largely by a great export surplus of scrap.

The numerous American loans or credits to big concerns like Krupp, Thyssen, General Electricity, Siemens and Haniel have been welcomed here by industry, but criticized from the viewpoint of the national foreign payment balance. Ex-Minister Bernhard Dernburg calls the foreign loans a "falsification of the payment balance." This criticism is based upon the fact that already, and even without reparations liabilities, there is a passive trade balance, involving large net payments to abroad. To this liability must now be added payments for interest and principal of the overseas loans to industry, and it is not clear how these payments can be made otherwise than by enormously increasing exports. Such an increase, if possible at all, would take a long time to bring about.

## Receipts of Foreign Pig Iron and Cast Iron Pipe at Boston

BOSTON, Feb. 10.—Receipts of foreign iron at this port in January aggregated 8212 tons, consisting of 5462 tons of India, 2000 tons of Dutch and 750 tons of English. The Indian iron was received in four lots, and the Dutch and English in one, each, making a total of six lots.

Importations of iron in February give promise of doubling those of January. In the first three days of the month alone 2108 tons of Indian, 1016 tons of Belgian and 1516 tons of Dutch, a total of 4640 tons, were unloaded at this port. Following are the Boston importations of iron from Jan. 1 to Feb. 3, in detail, figures in tons:

Belgian .....	1,016
Dutch .....	3,516
English .....	750
Indian .....	7,570
Total .....	12,852

About as much foreign iron has been received at Providence, R. I., but details are not available. In addition to the foreign iron received at Boston so far this month, 2422 pieces of cast iron pipe, presumably French, have been landed here.

## Indianapolis Foundrymen's Association Elects Officers

INDIANAPOLIS, IND., Feb. 10.—George L. Morehead, general office manager of the Link-Belt Co., was elected president of the Indianapolis Foundrymen's Association at the annual election of officers held Feb. 4 following a dinner at the Hoosier Athletic Club. T. J. Cornwell of the Peerless Foundry Co. was elected vice-president, and J. H. Hooker of the Sinker-Davis Co., treasurer. Members of the executive committee elected for two year terms were: Guy E. Street, American Foundry Co.; J. B. Lewis, Federal Foundry Co.; Henry Langsenkamp, Langsenkamp-Wheeler Brass Works, and H. G. Myers, Chandler & Taylor Co. W. D. Hammerstadt, Rackwood Mfg. Co., has another year to serve as a member of the committee. A. J. Allen, who has been secretary of the association for several years, was re-appointed. Reports of officers and committees were read at the meeting.

Plans are being made to advance the date of the annual meeting of the National Metal Trades Association,

which is usually held about March 15. A joint meeting of the metal trades with the Associated Employers of Indianapolis will probably be held the last week in February in order to permit Dr. Gus W. Dyer of Nashville, Tenn., professor of economics at Vanderbilt University, to address the meeting. Dr. Dyer was to have addressed the annual meeting of the Associated Employers Jan. 30, but his train was delayed and he did not arrive until after the meeting.

## Guaranteeing Prices Not Unfair, Says Majority of Federal Trade Commission

WASHINGTON, Feb. 10.—While the majority of the Federal Trade Commission in a decision last week went on record in declaring that the practice of guaranteeing the price of a commodity against decline is not in and of itself an unfair method of competition within the intent and meaning of the Federal Trade Commission act, two of the commissioners, Huston F. Thompson and James F. Nugent, dissented from this view. The commission went on record in this important subject when it dismissed complaints against three soap manufacturers who had been charged with unfair methods of competition by reason of giving a guarantee against price declines in the marketing of their products. This guarantee is given to jobbers.

## Higher Outputs in Czechoslovakian Steel Industry in 1924

WASHINGTON, Feb. 10.—Showing an increase over 1923, production of pig iron in Czechoslovakia in 1924 totaled 1,050,000 metric tons while the output of steel totaled 1,350,000 tons, according to estimates transmitted to the Department of Commerce by Commercial Attaché H. L. Groves, Prague. This compares with the output in 1923 of 800,000 tons of iron and 1,000,000 tons of steel, and with the 1922 production of 380,000 tons of iron and 440,000 tons of steel.

## Page Association in Standardization Work

The Page Fence & Wire Products Association held its third annual meeting at Pittsburgh, Jan. 27 to 30. It re-elected W. C. Sprau, Detroit, as president for the coming year and C. L. Holland, Pittsburgh, as vice-president. In line with Secretary Hoover's standardization program, the association enlarged the personnel of the standardization committee. Odd gages and heights of fence are being eliminated. Tennis court fences have been standardized as to mesh, and galvanizing specifications are being simplified.

The 1926 meeting of the association will be held in Chicago next January.

## Meeting on Ball Bearings

A meeting on ball bearings will be held in Philadelphia, Feb. 24, at the plant of the Hess-Bright Mfg. Co., under the auspices of the local section of the American Society of Mechanical Engineers. There will be an inspection of the Hess-Bright plant in the afternoon, followed by a buffet supper. In the evening W. L. Batt, president, Hess-Bright Mfg. Co.; Dr. Haakon Styri, chief of the SKF Research Laboratories, and H. E. Brunner, chief engineer, Hess-Bright Mfg. Co., will present papers. H. S. Harris, 410 Commercial Trust Building, Philadelphia, is secretary of the section.

Tunneling under the Ohio River, from Powhatan Ohio, to Franko, W. Va., is comprehended in a survey completed by the engineers of the Consolidated Fuel Co., Pittsburgh, an associate of the Bertha-Consumers Co., in connection with the erection of a tippie at Powhattan. At this place the Consolidated company owns approximately 100 acres of surface land, directly across from its Frances mine at Franko.

ESTABLISHED 1855

# THE IRON AGE

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Member of the Audit Bureau of Circulations and of  
Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

F. J. Frank, *President*

PRINTED IN U. S. A.

George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian

Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1. Subscription Price: United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50; Foreign, \$12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, New York, under the Act of March 3, 1879.

## The Individual and the Cycle

ARE business men giving too much time and energy to "the general business situation" and too little to their own individual work? Not a few men have been saying lately that they are. The matter is of serious importance.

Largely on account of the war, but partly also by way of natural progress, there is available much more information as to the course of trade than there was before the war, and there is much more analysis of what the statistics portend as to the course of business in future. It is natural and proper that these facilities should be used, just as one uses the telephone, the fountain pen and the air mail.

Information as to the probable course of trade is of immense value when it enables the business man to prepare for what is coming, to stock up one time and liquidate at another, to sell freely in one case and to keep the order book clear in another. But insensibly one may carry the thing farther and fall into the mental attitude of depending upon the course of trade to make business for him. The American spirit is one of playing the game and taking sides, and a disposition to root for the success of "general business" has been very much in evidence in the past few years.

This spirit takes the individual away from his own personal business duties. He gets into the way of associating his personal fortunes with "the general business situation" instead of with his own individual efforts. The transition has been easy and natural, but it is not good. These studies are useful, but they should not be allowed to undermine individual initiative and endeavor.

It is still worse when the business man accepts as his whole rule of faith and conduct that there is a cycle or an ebb and flow in business, and then, instead of studying the available information carefully for himself, with special application to his own circumstances, indolently accepts the ready made and perhaps carelessly made opinions of others that "business is bad" or "business is good." In the past year and a half there have

been waves of so-called "optimism" and "pessimism," alternating with a facility that has been miraculous rather than explicable on the grounds of changes in actual underlying conditions. There is reason to suspect that our attention to the business cycle has resulted in its being intensified instead of being smoothed out, which is what we thought ought to be brought about.

A great evil of this dependence of the individual upon the tide is that it tends to distort his views of good news and bad news. Facts cannot be downed by ignoring them, but one encounters men who seem to take as a personal affront the expression of an opinion that business is going to become less active. Yet in the long run it is in that aspect about 50 per cent of the time.

## The Passion for Investigating

APPARENTLY no member of Congress ever heard of the law of supply and demand, or if one has heard of it the donning of his toga immediately causes him to forget it. When the price of anything that directly interests the "peepul" goes up a motion is promptly made in Congress to investigate it. With the increase in the use of flivvers throughout the land the price of gasoline has become the most interesting thing. Long ago it was the price of bread, but now that is immaterial, commonplace. The prices for cake and gasoline are more pertinent. It was in order, therefore, that the recent advances in gasoline should have promptly evoked thoughts of a Congressional investigation.

Probably the populations of the rural districts, including some members of Congress, have been large buyers of fake oil stocks. The pity is that they have not become investors in some of the good ones, in which capacity they would have a different view of conditions.

For two years the great petroleum industry has been in the gloom of a depression, fundamentally the result of excessive production. The lat-



ter was the consequence of over-development, inspired by the boom of 1919-1920. Investors put millions upon millions into wells, tankage, pipe lines and refineries; and, in some major instances, before they got any dividends they saw the market value of their shares shrink in a few years to one-fourth the price they had put in by direct subscription for the building of plants. The operators of flivvers came into the enjoyment of 13-cent gasoline by virtue of the sweat of such unfortunate investors.

After a weary wait the clouds o'erhanging the petroleum industry begin to break and patient, perhaps disgusted, stockholders now see the prospect—not yet the actuality—of dividends on their hundreds of millions invested. We have heard some of them offering the not unreasonable prayer that the tank-wagon price for gasoline may rise as high as 25 cents. But with it around only 20 cents Congress has already begun to investigate. Of course we know that Congress, even in its solemnest functions, is unable to sway the law of supply and demand, although there used to be talk in Washington about repealing it. An easier expedient for punishment would be to pass an amendment of the income tax law requiring stockholders in all oil companies to hand over their dividends when they get them, proceeds to be distributed among the States, and operators of automobiles to be relieved from registration fees.

Quite a lot of investigations are going on at present, or are going to be started, and two or three more really do not matter. Somebody has got to look into the rise of wheat and determine whether Wall Street started it in order to induce the farmers to vote for Mr. Coolidge last November; and if so, why was the pushing up continued after Mr. Coolidge had been elected. (This seems to make Wall Street look rather foolish.) Also there are the important questions whether the farmers are really getting any of the \$2 price, and if not who is. A recent merger of some baking companies may become the subject of Congressional investigation, although a study of that subject is already being made by the Department of Justice and another one by the Federal Trade Commission. However, such a little thing as tripling the job is of no importance in the Congressional eye.

Then the electrical manufacturing companies are to be investigated to see whether they are skinning the public in the matter of lamp bulbs. Somebody, too, wants to find out whether the light and power companies all over the country are not banded together. Of course the copper producers are under constant surveillance and if the market turns in their favor so that they can begin to recoup their losses of late years they had better look out.

Prices! And profits! Dreadful terms! Many of our fellow citizens, including Congressmen, believe that they are determined daily by coteries that meet at the corner of Wall and Broad Streets in the City of New York. Mayor Hylan calls them the "interests." Alas, that things are not so simple and that there is a pesky law of supply and demand, which so often disappoints us. Alas, that we

cannot all be children and still believe in fairy stories!

### More Science in Steel Making

NOW that the boiler room of the modern power station has been made automatic—another great stride in adapting the scientific idea to the control of human operations—a problem of like difficulty may soon be tackled in the open-hearth steel plant. When varying loads on a power plant, requiring varying quantities of steam at a constant pressure, are met by means of apparatus which automatically speeds up or down the fuel supply, and keeps dampers and draft pressures in the proper relation with air sufficient for effective combustion; when boiler room attendants are reduced in number and become mainly observers of the various instruments of the system—then the boiler is no longer subject to the erratic judgment of fireman or water-tender and no longer is it a loosely fluctuating performer.

The open-hearth furnace plant presents a different problem, of course, but human judgment there has full sway, with empiricism still the order in the midst of a scientific age. Pyrometer control, even without an approach to the automatic, has made little headway. It is admitted further that, without curtailing tonnage, great economies are possible in the utilization of heat. The lack of the scientific attitude is seen in the common habit of rebuilding furnace brick-work from memory or with the say-so of foremen as a guide in reproducing the original construction. It is easy, at a distance from plant exactions, to suggest what may seem possible, but there is certainly something in the will forcing the way against the inertia of tradition and the trying conditions of steel making. It would be highly helpful if steel makers would make themselves heard, and we need not say that these columns are open for the expression of views as to ways and means of improving open-hearth furnace operations.

SOME idea of the growth of the porcelain enamel industry is obtained by comparing the equipment of a kitchen of a well-equipped home with what was used a few years ago. Manufacturers have added to the popularity of enameled equipment by improving the quality of enamel work on sheet and cast iron. Foundries also have done their part in making enameled metal of higher quality by furnishing castings with better surface conditions for enameling, while sheet mills have improved the quality of sheets used for enameling. The future of the business is discussed in the February issue of the *Enamelist*, which states that a larger percentage of kitchen ranges is finished in porcelain enamel every year, that more porcelain is being used on heating stoves each year and that the porcelain enamel table top has become standard in most kitchens. The use of porcelain has practically saved the heating stove business from oblivion, according to this publication, and more companies are adding enameled heaters to their lines. Such products

as scales, manifolds for high-grade automobiles, and others formerly not considered suitable for such coating are now enameled in quantities, and it is predicted that before long cast iron radiators will be enameled by all the large manufacturers of radiation.

### Continental Steel in Britain

HOW disturbing is the competition British steel companies are getting from Continental countries appears in the British foreign trade statistics for 1924 found on other pages. Imports of iron and steel went to the highest figure ever recorded—2,888,400 gross tons. This was an increase of 88 per cent over 1923 and 23 per cent over 1913. The feature of last year's movement were the heavy receipts of semi-finished steel. At 1,082,000 tons these made up over 37 per cent of the total imports and Belgium contributed nearly half of them. The purchases of foreign pig iron were also large, greater than in 1923 or 1913.

While British iron and steel exports last year were only 78 per cent of the 1913 total, they were but 11 per cent under those of 1923. One explanation of the better showing in exports than in imports is that much of the imported semi-finished steel probably found its way as finished steel into export channels.

High labor costs, expensive coal and higher transportation charges are the important factors in holding the British foreign steel trade below that of pre-war years. Some of the same influences have been effective in pushing our own export trade to its present inferior position. On the other hand, cheaper labor and favorable exchange rates have combined to swell Belgian and French steel exports to far greater than pre-war proportions. With labor troubles looming up, the British outlook is not promising. It is likely to be many days before Great Britain recovers her pre-war standing in the world's iron and steel markets.

WORLD demand for tin plate keeps growing. The notable record made in 1923 in the combined American and British exports was outdone last year. The exports of the two countries in 1924 amounted to 59,700 tons per month—

### Reproduction of Pastel Painting for Subscribers of the Iron Age

Referring to the reproduction by THE IRON AGE of the pastel painting, "Stripping Molds from Ingots," made in a steel plant at night by Roderic D. MacKenzie, Whiting Williams, the well known investigator of industrial conditions, writes as follows:

"I got a real thrill out of the ingot picture in your issue of Jan. 1. It's a beauty. If the best way for me to get hold of it for decorating my office is to receive the whole great volume, please let me have it in return for check inclosed. Otherwise, I'll be happy to have it ready for framing. Personally, I think it would help the morale of the entire steel world if as beautiful a thing as this were to appear in at least dozens of offices!"

Similar hearty commendations have been received from others. THE IRON AGE has a few extra copies of the reproduction of the pastel which it will send to subscribers upon request.

13,400 tons for American and 46,300 tons for British makers. In 1923 the corresponding total for the two countries was 56,300 tons. The 1924 increase was therefore about 6 per cent, bringing the demand to the largest ever recorded. Over the pre-war year 1913, the 1924 increase was about 26 per cent. Last year's gain was due almost entirely to an increase in American sales of 3000 tons per month over 1923, bringing the total to over double that of 1913. The tin plate movement is in contrast with that in some other products, as galvanized sheets and rails, in which last year's exports of the two countries were less than before the war. The world's needs in food and oil containers are each year assuming larger and larger proportions.

### Diminishing Railroad Returns

IN an address before the Illinois Lumber Merchants' Association, Samuel O. Dunn, editor of *Railway Age*, pointed out that average railroad returns in the four years ended with 1909, including the panic year 1908, were 5.42 per cent on property investment. In the four years ended with 1913 the average was 4.92 per cent. In the four years ended with 1917 it was 4.74 per cent. "This decline in net return before the war almost stopped railroad development," said Mr. Dunn. "During the next three years, owing to Government control, the returns were guaranteed." In the four years ended with 1924, without Government guarantee, the average return was only 3.92 per cent. Handling more freight business in the last two years than ever before in their history, the railroads yet were able to obtain a return of only 4.5 per cent, compared with 5.5 to 6 per cent in several years preceding our entrance into the war.

The railroad companies well may fear the effects on the legislative mind and the public mind of the sort of advertising their securities have had recently in Wall Street. Some stocks have had spectacular advances on predictions of still larger earnings and of attendant increases in dividends. The public imagination is susceptible to such propaganda, often the work of pools, and is very likely to get an exaggerated idea of the better estate into which the railroads have come.

### Another Increase in Steel Corporation's Unfilled Orders

Unfilled orders on the books of the United States Steel Corporation as of Jan. 31 aggregated 5,037,323 tons or 220,647 tons more than remained unfilled on Dec. 31 and the largest amount recorded since August, 1923. The January increase compares with one of 784,757 tons in December. A year ago the unfilled business was 4,798,429 tons or 238,894 tons less than for Jan. 31, 1925. Following is the unfilled tonnage as reported by months beginning with January, 1923:

	1925	1924	1923
Jan. 31.....	5,037,323	4,798,429	6,910,776
Feb. 28.....		4,912,901	7,283,989
March 31.....		4,782,807	7,403,332
April 30.....		4,208,447	7,288,509
May 31.....		3,628,089	6,981,351
June 30.....		3,262,505	6,386,261
July 31.....		3,187,072	5,910,763
Aug. 31.....		3,289,577	5,414,663
Sept. 30.....		3,473,780	5,035,750
Oct. 31.....		3,525,270	4,672,825
Nov. 30.....		4,031,969	4,368,584
Dec. 31.....		4,816,676	4,445,339



# The Foreign Debts—Is the United States Unfair in Collecting Them?

*A colloquy on facts which Europe is inclined to overlook in appraising the contribution of American industry to the war*

BY PARACELUS

QUINN, a stock broker, and Austin, a banker, commute from Westchester County. Coming down in the club car they often engage in discussions of questions of the day to which I listen patiently. Sometimes I feel that their palavers are really worth while. Austin generally knows what he is talking about. A few days ago Quinn broached the subject of the foreign debts and the wealth of the United States. The discussion ran along in the following way:

Quinn. I see that the French League demands that the French Government refuse to carry on separate debt negotiations with the United States. The newspapers say that this league has 42,000 members and includes the cream of the intellectuals in France. The league's statement closes with this reference to the United States: "It is, in fact, immoral that a country which has been prodigiously enriched by the war at the price of very slight losses; which has drawn into its treasury more than half the gold of the world; for whom a privileged geographical position permits restraints on its military expenditures, should show itself as a creditor so ferocious toward a country such as France—devastated by 51 months of war, bled white and forced to maintain an army sufficient to hold in respect a neighbor athirst for revenge, even more dangerous because of the fraudulent bankruptcy allowed her and her marvelous financial recovery." That's sweet reading for Americans, eh!

Austin. Well, more or less; we've brought it on ourselves.

Q. How so?

A. Why, as one illustration, the newspapers have just been parading a Census report telling how the wealth of the American people jumped from 188 billion dollars in 1912 to about 321 in 1922. Some jump! With our press chuckling over it, you can't blame Rudyard Kipling and the French League from thinking that we grew fat out of bleeding Europe.

Q. Well, I suppose it's true, seeing that the Census says it.

A. Not necessarily. The Census counts noses with reasonable accuracy, we hope; but when it comes to industrial and economic enumerations, it makes a good deal of a mess of things. You see, the Census is essentially an adding machine, not a thinker. It can add numbers, as in the enumeration of population, but when it is a question of valuation, it can do no more than foot up the estimates of a great many persons, who may differ in their ideas. Such a one is a job for an engineer, or an expert appraiser, not for a mere tabulator.

Q. No doubt the change in the value of the dollar since 1913 cuts a figure in such an affair?

A. To be sure. Some things are now being valued statistically in terms of the dollar in 1913, while other things are valued in current dollars; of course, I am speaking from the economic standpoint. For example, stocks of goods are valued according to existing market prices, but the steam railroads of the country are estimated neither at market value as

represented by their securities nor at reproduction cost. They are estimated at physical value as of pre-war times, or rather on a present physical basis computed at pre-war prices. Even so, authorities differ. The Interstate Commerce Commission reckons about 20 billion dollars. The railroad managers reckon about 25 billion. If the physical items of the latter were computed at present prices, the total would be 37 billion dollars or so. Such an estimate would evoke a howl from La Follette.

Q. I get the idea. The Census adds up chips of different colors and calls the total so many chips.

A. Something like that. There is a similar incongruity in the matter of real estate. In some parts of the country the market value of real estate, as reflected by rentals and transactions, has increased in approximately the same ratio as the general economic index, but in other parts of the country it has not increased at all.

Q. Such a discrepancy would indicate that present price levels are the result of conditions of demand and supply, rather than inflation, would they not?

A. It seems so to me. Anyhow, such irregularity in conditions prevents the Census estimate of wealth for 1922 being readjusted by dividing the total by the general economic index.

Q. How then is any reliable comparison to be made? How are we going to ascertain where we stand?

A. Why, by comparing what we possess at different times in a purely physical way. The wealth of a people is really measured by the land and buildings, means of transportation, machinery, mines, cattle, etc., that they have.

Q. How about gold?

A. Gold in itself is not of much use, but inasmuch as it can command goods from other countries it is an element of physical wealth. However, the gold in the United States, which is supposed to be about one-half of all that exists in the world, constitutes only about 1 per cent of the wealth of the American people even now.

Q. Then the gold that we drew from Europe during the war did not in itself add much to our riches.

A. It should be obvious that it did not.

Q. Well, how are we going to find out how much we did add?

A. I suppose you mean how may our national wealth be compared from time to time. Well, no one can do more than make an intelligent approximation. That seems to imply that the estimation for a series of years should be made according to a consistent principle and preferably by the same man. Dr. Walter Renton Ingalls made such estimates for 1916 and 1920. He made no comparison with the Census estimate for 1912. He thought it was an understatement. Instead of a total of 188 billion as estimated by the Census, he considered 235 billion more probable.

Q. How did his estimates for 1916 and 1920 com-

pare with each other; how did the Census estimate for 1922 compare with them?

A. He estimated the national physical wealth as about 268 billion dollars for the end of 1916 and about 273 billion for the end of 1920. The Census estimated about 320 billion for the end of 1922. In an article in *THE IRON AGE* last May, Dr. Ingalls analyzed the Census estimate and showed that if its inflated valuations for chattels and stocks of goods were expressed in the same terms that he had used, the Census total would probably come down to about 280 billion. In the itemization of the national wealth in fixed capital—the lands, buildings, railroads, manufacturing machinery, etc.—which account for more than 80 per cent of the total, the Census estimates for 1922 were in close agreement with those of Dr. Ingalls' for 1920, which lends support to his comparison of 1920 with 1916.

Q. It does not look from this as if the United States gained anything in wealth out of the war, does it?

A. No. How could it? Our increase in wealth results from our national savings, and the latter take the form of houses, railroads, manufacturing plants, public improvements, etc. When the United States went into the war, its people had to divert their work and materials to munitioning and maintaining armies. They had to cease building houses and railroads, and as a consequence they soon began to experience shortage of housing, transportation difficulties, etc. Their troubles would have been more acute had it not been for the normal surpluses previously existing.

Q. We increased our manufacturing plant very greatly, did we not? Don't the foreigners point to that?

A. Yes, without any doubt, but we were led to overbuild ourselves in that way and were subsequently constrained to write off a large surplus for which we had no use. This was equivalent to a war expense. In fact, in many industries we deliberately enlarged capacity with knowledge that it would become useless at the end of the war and would have to be thrown away.

Q. Tell me this: Do the estimates of the national wealth take into account the foreign debt that has accumulated in our favor?

A. The Census does not estimate it. Dr. Ingalls estimated separately the credit balance in our favor at about 18 billion dollars at the end of 1920, compared with practically nothing at the end of 1916. If that book increase were added to the increase in physical inventory, the total gain would be about 23 billion, which would correspond pretty closely with our normal pre-war savings for a four-year period. Considering, however, that 1916-20 was a period of sharply rising prices, and that the foreign debt accumulated under such conditions, our gain would figure out much less than the pre-war rate, even if it were a real gain. In making this estimate, however, Dr. Ingalls pointed out that we would never collect the face value of the foreign debt and subsequent events have verified that forecast.

Q. If it be true, as you say, that the wealth of the American people has not increased to the degree supposed and stated by the newspapers who unthinkingly refer to the Census figures, how do you account for the great increase in deposits in the savings banks? Certainly there is no illusion about their figures, and do they not show that our people have been getting much richer?

A. No. Such an account does not appear at all in an inventory of the national wealth. Bank deposits are of the nature of credit transactions. Since the war there has been a great shifting of credit among all classes of people. Rich men make their own in-

vestments. Wage earners put their money into savings banks, and the latter make the investments. The recent increase in savings banks deposits reflects shifting of credit more than anything else.

Q. Well, how about profiteering? How about the recent publication of income tax returns? I hear that the French newspapers are pointing to that list as a very *Almanach de Gotha* of American wealth.

A. In the first place this is a very great country, and that out of its 110 million people there is a large number of persons of great income is not surprising. It should be borne in mind, too, that our official method of reckoning incomes is vicious. A man may make a very large return in a single year, which may represent not his real income, but rather his liquidation of property that may have been increasing in value during a great many years. The Bureau of Internal Revenue itself has lately reported that a large proportion of the great incomes reported in a recent year were ascribable to such liquidation. However, in the matter of all incomes there has been the same kind of shifting as in the instance of savings bank deposits. Henry Ford has created a colossal income for himself by selling flivvers to the farmers, but you do not hear anything of how the farmers have let their property deteriorate in order to lay their hands on cash to hand over to Mr. Ford. The automobile and petroleum industries have made new incomes, some of them princely, but a good many old ones that were derived from the fertilizer industry have been crippled. New England incomes that used to be drawn from New Haven and Boston & Maine railroads ceased some years ago. What might have accrued to those unfortunate stockholders passed to wage earners, some of whom bought flivvers and helped to swell Mr. Ford's income. These are merely illustrations of the shifting process.

Q. You cannot make me believe that the war did not create a good many millionaires.

A. I shall not try to. It did. Also it created a good many paupers. Without any doubt, we profited some out of the war brides in 1915-16; but speaking nationally all that we made then, and more too, was lost after the United States went into the war. Bridgeport was a booming city during the war, but later on it lost. I know some men who were shrewd enough to get out of everything in 1916 and stay out; but I know a great many more who made fortunes and lost them and ended in being less well off than when they began.

Q. I suppose that a good deal depends on how broad a view any one takes in looking at such things.

A. Not merely a good deal, but everything. If we ourselves do not see things broadly and clearly, we can't find much fault with the Frenchman for not seeing things so. The fact is simply that war is a destructive thing, and impairs countries that are not even invaded. A country may lose of its plant, its wealth, by the battering of great guns, but it may also lose by the mere wearing out for military use.

Q. What do you think of the foreign debts?

A. They are owed to us fairly and by previous agreement. I have thought, however, that it would be generous of us to reduce them. France incurred her debt to us by our letting her have, figuratively speaking, a pound of copper that we charged up at 25c., and other things in proportion. Let her return to us the pound of copper, now worth about 15c., or its equivalent, but let us not require her to give us back two pounds of copper because we charged her 25c. for one pound eight years ago. However, our popular sentiment is not to let France give us goods at all; nor is there any popular willingness to consent to simple debt reduction. Any American statesman who should propose either of those things would



write his own epitaph. Nevertheless, in funding the British debt to us, we agreed to a composition that is equivalent to a reduction, a very generous one. That met with popular approval, even by such citizens as Brookhart and La Follette, who are ignorant of the principles of finance and the meaning of "present value." Of course, we are willing to make a similar reduction to France and other countries that have not yet settled, but while being generous, we unfortunately do not get any credit for it.

Q. I guess we didn't make the right gestures.

A. Probably we couldn't. We had to reduce the debts without letting anybody outside the intelligentsia know that we were doing it.

Q. It looks as if the French statesmen had a similar problem on their own hands, eh?

A. Quite so. And in all the palavering no one will so much as hint the real nubbin.

Q. What is that?

A. Why, that we'll not let Europe work for us so as to return the goods we lent them when they were short.

## BRITISH FOREIGN TRADE

### Imports of Steel at Record in 1924—Exports Last Year Less Than in 1923

British steel exports in 1924 at 3,941,420 gross tons were less than in 1923 by 491,813 tons or a little over 11 per cent. By contrast, however, the imports were the largest in many years. The total was 2,888,424 tons or an increase of nearly 88 per cent over the 1,533,993 tons imported in 1923.

Comparative data for both exports and imports, scrap included, are as follows:

<i>British Iron and Steel Exports and Imports, Gross Tons</i>			
	Exports	Imports	
Average per month, 1924.....	328,450	240,700	
Average per month, 1923.....	369,800	127,800	
Average per month, 1922.....	295,980	82,215	
Average per month, 1921.....	144,885	152,734	
Average per month, 1920.....	274,881	128,685	
Average per month, 1919.....	188,519	50,801	
Average per month, 1913.....	420,757	195,264	

At 240,700 tons per month in 1924 the imports were 23.3 per cent larger than in 1913. The exports last year of 328,450 tons per month were 78 per cent of the pre-war year 1913.

More detailed data of the principal exports are as follows:

<i>Principal British Exports, Gross Tons per Month</i>			
	1913	1923	1924
Pig iron and ferroalloys.....	93,700	74,500	49,997
Steel rails .....	42,200	25,600	14,559
Steel plates .....	11,200	16,123	15,389
Galvanized sheets .....	63,500	50,183	54,153
Steel bars, rods, etc.....	20,900	37,852	23,200
Tin plates .....	41,200	45,928	46,284
Black plates and sheets.....	11,700	29,500	24,469

In all the above products except galvanized sheets and tin plate, the 1924 exports were less than those in 1923.

Exports of scrap iron and steel in 1924 were heavy at 38,270 tons per month, compared with 17,657 tons per month in 1923 and with 12,880 tons per month in 1922. In 1913 they were 9600 tons per month.

Data as to importations of importance are as follows in tons per month:

	1913	1923	1924
Iron ore .....	620,000	488,373	484,200
Manganese ore .....	50,100	43,440	27,109
Pig iron and ferroalloys..	18,000	9,157	25,700

Imports of semi-finished steel in 1924 were notable at 1,082,691 tons, compared with 562,834 tons for 1923. Of last year's total 523,660 tons, or nearly half, came from Belgium.

### Committee Appointed for Oil and Gas Power Week

For oil and gas power week, to be celebrated April 20 to 25, an executive committee has been appointed as follows: Dr. William F. Durand, president American Society of Mechanical Engineers, chairman; James F. Norris, C. E. Lucke, J. Edgar Pew, W. Trinks and L. H. Morrison. Thirteen organizations are cooperating in the plans and also probably 75 engineering schools. Ninety-two manufacturing concerns will also be asked to cooperate and to supply technical data. Cities where technical meetings are to be held now number 33. A list of 59 subjects covering the oil and

gas-power field has been prepared and topics for nationwide discussion will be selected from it. William E. Bullock, assistant secretary, American Society of Mechanical Engineers, 29 West Thirty-ninth Street, New York, is serving as corresponding secretary.

### Hungarian Steel Company Borrows in the United States for Improvements

It is announced in New York that the proceeds of the \$3,000,000 of Rima Steel Corporation 7 per cent 30-year gold bonds recently placed in the United States will be applied largely to improvements. The Rima Steel Corporation (Rimamurany-Salgotarjan Iron Works, Ltd.) is a large factor in the iron and steel production of Hungary. Its works are located at Ozd. There are four blast furnaces and an open-hearth plant consisting of ten stationary furnaces of 30 tons capacity each. The possible annual output is 200,000 tons of pig iron, 300,000 tons of open-hearth ingots, 250,000 tons of finished steel and 50,000 tons of wire nails, cold rolled strip, shovels, axes and horseshoes. The mines of the company can furnish 500,000 tons of ore a year and 450,000 tons of coal, and it can produce also 150,000 tons of limestone and 10,000 tons of raw magnesite. Some of the company's mills are at Nadasd, including sheet mills, galvanizing plant and tin plate mill. The wire plant is at Salgotarjan. Under full operation the company employs 5200 men in mines and quarries, 1050 at the blast furnaces, 3700 at the steel plant and connected rolling mills, and 1200 each in the sheet and wire plants.

The company's improvement program includes enlargement of its electric power station, additional plate mill capacity, opening two new coal mines and an iron mine, and building additional homes for its workmen.

### British Indian Assembly Votes Bounty for Steel Industry

WASHINGTON, Feb. 10.—The British Indian legislative assembly has voted to grant a bounty to the domestic steel industry not to exceed 5,000,000 rupees during the current fiscal year, according to Trade Commissioner C. B. Spofford in a cable the Department of Commerce has just received. Exports to pig iron dropped from 27,145 long tons in November to 20,742 tons in December, 75 per cent of which went to the United States. Imports of iron and steel into India during December included 787 tons of bars and channels, 14,354 tons of steel bars, 9000 tons of structural steel, and 4156 tons of tubes, pipes, and fittings. This compares with an importation of 585 tons of iron bars and channels, 16,538 tons of steel bars, 7343 tons of structural steel, and 4911 tons of tubes, pipes, and fittings in November.

Oxygen enrichment of combustion air in heating furnace practice was the subject of an address by W. C. Buell, Chapman-Stein Engineering Co., Mt. Vernon, Ohio, and retiring chairman mechanical section, Engineers' Society of Western Pennsylvania, at the annual meeting of the section at the William Penn Hotel, Pittsburgh, Monday evening, Feb. 2.

## JANUARY STEEL OUTPUT

### Increase Over December 13.3 Per Cent in Daily Rate—Rate Near 1924 Peak

A decided increase in the steel ingot production in January brought the total to a figure close to the highest output in March last year. At 154,796 gross tons per day the January production made a gain of 13.3 per cent or 18,187 tons per day over the December rate. The volume was somewhat more than double the low point of 71,901 tons per day in July, 1924.

The statistics of the American Iron and Steel Institute show that the January output of the companies which made 94.84 per cent of the country's total in 1923 was 3,963,836 tons. Assuming that the 5.16 per cent not reporting produced at the same rate, a total January output is indicated of 4,179,498 tons. The corresponding annual rate is about 48,140,000 tons or about 89 per cent of capacity, against 78.5 per cent in December.

The table gives the production by months of the different kinds of steel, together with the estimated daily rate for all companies.

*Monthly Production of Steel Ingots, Reported by Companies Which Made 94.84 Per Cent of the Steel Ingot Production in 1923*

(Gross Tons)				Calcu- lated Monthly Production All Companies	Approximate Daily Production All Companies
Months, 1925	Open- hearth	Bessemer	All Other		
Jan.	3,262,748	689,996	11,092	4,179,498	154,796
1924					
Jan.	2,766,534	667,032	12,577	3,633,639	134,579
Feb.	2,902,641	695,905	14,085	3,809,185	152,367
March	3,249,783	706,801	15,260	4,187,942	161,075
April	2,575,788	573,381	12,356	3,333,535	128,213
May	2,060,896	425,099	6,648	2,628,261	97,343
June	1,637,660	310,070	2,622	2,056,466	82,259
July	1,525,912	241,880	5,162	1,869,416	71,901
Aug.	2,042,820	361,781	5,759	2,541,501	97,750
Sept.	2,252,976	409,922	6,844	2,814,996	108,269
Oct.	2,505,403	438,468	7,030	3,111,452	115,239
Nov.	2,479,147	459,349	8,397	3,107,226	124,289
Dec.	2,810,404	546,506	11,641	3,551,825	136,609
Total	28,809,964	5,836,194	108,381	36,645,444	117,453

## SUCCESSFUL SAFETY WORK

### Marked Results from Campaign Begun Nine Years Ago in Disston Plant

A pleasing picture is presented in the annual report of the general safety committee of Henry Disston & Sons, Inc., Philadelphia, which records that during 1924 the number of accidents causing lost time was only one-fifth of those in 1916, when the intensive safety campaign was started. Only one-fifth as many days were lost in 1924 because of the accidents. The totals for the years 1919 to 1923 also show large reductions in the number of accidents as compared with 1916, the year 1921 with 37 being outstanding in all respects.

The average number employed in the plant last year was 3000. There were 71 accidents resulting in 1174 days lost time, the total for these items at the end of 1916 being 300 and 5471 respectively. The frequency rate, or number of time-losing accidents per one-million hours worked was 10.3 and 38.2 for 1924 and 1916 respectively, and the severity rate, or number of days lost per one-thousand hours worked for these periods were 0.171 and 0.7 respectively.

That the general safety committee, of which Arthur N. Blum, chief engineer, is chairman, has been functioning actively, may be judged from what follows. The number of inspections by the workmen's committee every year average 36 and there are also 36 general committee meetings at which the reports of these inspection committees are dealt with. In nine years there have been 324 meetings at which concrete suggestions averaging between 300 and 400 per year were passed upon. Approximately 3000 suggestions have been investigated and ordered for execution since the inauguration of the safety campaign. During 1924, 343 suggestions were submitted, 306 of these being executed. Suggestions coming from the steel company numbered 117.

At these meetings some subject of general importance to the whole plant, such as heating, ventilation, lighting, toilets and fire protection is brought up, and the general discussion usually results in some permanent improvement affecting the whole plant. As the result of such suggestions 461 orders relating to machine safeguards, toilets, floors, building repairs and other items were issued in 1924.

The company's low accident rate has enabled it to apply to the rating bureau to be put on its own experience in the matter of insurance rates. The rate established for the company each year may be taken therefore as an indication of the success of its accident prevention work. The reduction of the company's average premium as compared with last year was 10 cents per \$100—from 52 to 42 cents, or nearly 20 per cent in one year. The manual rate established in the State of

Pennsylvania for a steel manufacturer of the same class as the Disston company is \$1.20 for each \$100 wages paid. The company's rate in 1924 was 66 cents. The manual rate for saw and file manufacture is 65 cents; the company's rate was 36 cents.

These figures are offered in the report to show to what extent safety work pays. In this connection it is stated: "If we consider that in the last nine years, according to figures of the insurance companies, the company had paid approximately \$30,000,000 in wages, and if we were to figure only 25 cents less on every \$100 against the corresponding standard rate, it would mean a saving of about \$75,000 on premium alone. Safety pays."

### Proposed Merger of Eastern Steel Co. and Penn Seaboard Steel Corporation

Reports are current of negotiations for a merger of the Eastern Steel Co., Pottsville, Pa., and the Penn Seaboard Steel Corporation, Philadelphia, being well advanced. Capital required in the transaction is said to be in the hands of a Philadelphia bank. The Penn Seaboard Steel Corporation was incorporated in New York in 1915 with capital stock of 200,000 shares of no par value, the name at that time being the Penn Marine & Ordnance Castings Co., Inc. The present name was taken in 1916. The company has the Penn works at Chester, Pa., consisting of 5 acid open-hearth furnaces and a gray iron foundry, with a total annual capacity rated at 62,000 tons of steel castings. The Baldt works, New Castle, Del., is equipped with 6 basic open-hearth furnaces and formerly had a 30-in. x 84-in. two-high sheared plate mill, which was later converted into a blooming and billet mill. The New Haven works of the company, New Haven, Conn., with 3 basic open-hearth furnaces and one acid open-hearth furnace has a rated annual capacity of 40,000 tons of steel ingots. The company also controls the Tacony plant at Tacony, Pa., equipped to produce 60,000 tons of rolled and 8000 tons of forged product, and 40,000 tons of steel ingots.

The Eastern Steel Co., Pottsville, Pa., with outstanding capital stock of \$2,200,000 of 7 per cent cumulative preferred and \$4,000,000 of common, controls three blast furnaces at Pottstown leased from the Warwick Iron & Steel Co., with a total rated capacity of 300,000 tons a year. Only two of these furnaces are in first class condition and one operating at present. At Pottsville the company operates an open-hearth steel plant with 6 basic open-hearth furnaces, a blooming mill, structural mill and two merchant mills, also a bridge works with an annual capacity of 15,000 tons. The company has an annual rated capacity of 180,000 to 200,000 tons of structural shapes.



## FABRICATED STEEL BUSINESS

### Relatively Quiet Week in Volume of Bookings— Inquiries Promising

With awards for 20,000 tons in the past week, bookings so far in February in structural steel appear to be 15 per cent below the rate of January. The tonnage called for in new inquiries on the other hand was larger than for any week since Jan. 1, being over 35,000 tons. An interesting item is that the Oakley Construction Co., New York, contractor on the De Kalb Avenue, Brooklyn, N. Y., subway section, involving 4300 tons, has notified the City of New York that it will not wait longer for instructions to begin work, in which case new bids might be required.

Loft building, 232 West Twenty-sixth Street, 1100 tons, to Harris Structural Steel Co.

Bisjo Realty Co., New York, loft buildings on Thirty-ninth Street and Forty-eighth Street, New York, 200 tons in each, to A. E. Norton, Inc.

City of New York, Public school No. 35, Brooklyn, 400 tons, to A. E. Norton, Inc.

Rhode Island School of Design, Providence, R. I., 250 tons, to Palmer Steel Co.

Brooklyn Elevated Railroad, Brooklyn, N. Y., 300 tons, to Shoemaker Bridge Co.

Public Service Production Co., Newark, N. J., switch house at Marion, N. J., 200 tons, to Shoemaker Bridge Co.

Pennsylvania Railroad, bridge at York, Pa., 300 tons, to American Bridge Co.

Bath-Portland Cement Co., Sands Eddy, Pa., 900 tons, to American Bridge Co.

Office building, 266 William Street, New York, 250 tons, to Harris Structural Steel Co.

Euclid-Seventy-first Street Building Co., Cleveland, garage, 550 tons, to Massillon Bridge & Structural Co.

Marquard Sash & Door Mfg. Co., Cleveland, 100 tons, general contract awarded to Buldt Construction Co.

Rodgers Sand Co., Pittsburgh, five steel barges, 825 tons, to Jones & Laughlin Steel Corporation.

Lorain, Ohio, office building, Drummond Miller Co., Cleveland contractors, 250 tons, to Jones & Laughlin Steel Corporation.

Pittsburgh Athletic Co. (Pittsburgh National League Baseball Club) grandstand extension, 1300 tons, to Ft. Pitt Bridge Works.

Pittsburgh Steel Products Co., Allenport, Pa., 2200 tons, to McClintic-Marshall Co.

Harbison-Walker Refractories Co., Bessemer, Ala., 350 tons, and Lehigh Portland Cement Co., Tarrant City, Ala., 100 tons, both to Southern Steel Works Co., Birmingham.

Andean Oil Co., Columbia, South America, 10 oil storage tanks, 2000 tons, to Chicago Bridge & Iron Works.

Sheridan Road Theater, Chicago, 900 tons, to A. Bolter's Sons Co.

Commonwealth Edison Co., Chicago, East Lake Street substation, 732 tons, to Hansell-Elcock Co.

Des Moines, Iowa, power plant, 500 tons, to Pittsburgh-Des Moines Steel Co.

Theater, Leavitt Street and Archer Avenue, Chicago, 353 tons, to United Boiler Heating & Foundry Co.

Alpha Portland Cement Co., extensions at LaSalle, Ill., 300 tons, and Bucyrus Co., South Milwaukee, Wis., new core room, 200 tons, both to Worden-Allen Co.

Pacific Fruit Express Co., Nampa, Idaho, car repair shops, 450 tons, to Minneapolis Steel & Machinery Co.

Santa Fe Railroad, San Bernardino, Cal., shop, 120 tons, to Lowth Iron Works.

Pacific Borax Co., Death Valley, Cal., 175 tons, to Ralston Iron Works.

Alamo high school, San Francisco, 100 tons, to Western Iron Works.

White Motor Truck Co., San Francisco, 272 tons, Dyer Brothers, low bidders.

Spring-Wells, Mich., grade separation, 550 tons, to McClintic-Marshall Co.

Sellers Mfg. Co., Chicago, 150 tons, to McClintic-Marshall Co.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

City of New York, repair shop at Coney Island, Board of Transportation, 7000 tons, bids open Feb. 13.

Loft building, 42 West Thirtieth Street, New York, 1000 tons.

Boston & Albany Railroad, new station and subway construction at Springfield, 1100 tons.

City of New York, Borough of Queens, Jamaica high school, 4000 tons.

New York Central & Hudson River Railroad, bridges in Ohio and Indiana, 600 tons, bids in.

Bennie-Dillon Building, Nashville, Tenn., 700 tons.

Florida East Coast Railroad, bridge, 300 tons.

Company of Master Craftsmen, Flushing, L. I., 500 tons.

Madawaska, Me., paper mill, 700 tons.

Baltimore & Ohio Railroad, bridge work, 1000 tons, bids in.

City of New York, shed for Pier No. 2, Hudson River, 1000 tons.

Louisville & Nashville Railroad, bridge work, 400 tons, bids taken.

Big Four Railroad, girder spans, 120 tons, bids in Feb. 16.

Forest City, S. D., bridge over Missouri River, 1400 tons.

Sheboygan, Wis., garage, 150 tons.

South Chicago Savings Bank, South Chicago, 150 tons.

Olympic Building, Los Angeles, 500 tons.

Casa del Mar Club, Santa Monica, Cal., 500 tons.

City of Vallejo, Cal., 22 miles of 22 or 24-in. pipe for Gorden Valley water project, involving more than 1000 tons of plates, bids close Feb. 18.

Pan-American Oil Co., 17 tanks in Oakland, Cal., and 10 tanks in San Francisco, 1200 to 1500 tons.

Oakland-Alameda estuary tube, Oakland, Cal., 6400 tons, bids March 23.

Germantown Hospital, Germantown, Pa., 1300 tons.

Atwater Kent Mfg. Co., Philadelphia, 700 tons.

Office building in rear of 1520 Locust Street, 600 tons.

Motors Realty Co., Cleveland, Buick sales and service building, 3000 tons.

Commissioners of Port of New Orleans, warehouse, 475 tons, Rochester Bridge Co., low bidder.

## RAILROAD EQUIPMENT BUYING

### Heavy Car Purchases and Fair Inquiry—No New Inquiries for Locomotives Reported

Car orders reached a total of 4725, the largest number reported purchased in any week of this year. Of this total, however, 500 were for the Canadian National Railways to come from Canadian car builders. New inquiries that appeared during the week totaled 770 cars. No new inquiries for locomotives were noted, but the Minneapolis & St. Louis, in addition to further car purchases, is expected shortly to be a buyer of locomotives. Among the items may be mentioned the following:

The Delaware, Lackawanna & Western has awarded 1000 box cars to the American Car & Foundry Co.

The Union Pacific has purchased 15 coaches, 5 diners, 5 observation cars from the Pullman Car & Mfg. Corporation, 15 baggage cars from the American Car & Foundry Co., 500 flat cars from the Standard Steel Car Co. and 500 gondola cars from the Western Steel Car & Foundry Co.

The Mexican Petroleum Co. has bought 500 tank cars.

The Soo Line has closed on 125 ore cars with the Pullman Car & Mfg. Corporation and 125 with the American Car & Foundry Co.

The Minneapolis & St. Louis has purchased 1000 box cars, 500 gondola cars, 200 flat cars and 125 refrigerator cars from the American Car & Foundry Co. and is about to buy passenger cars and locomotives.

The Canadian National Railways have placed 11 tourist cars with the National Steel Car Co., Hamilton, Ont.; 225 automobile cars with the Canadian Car & Foundry Co. and 175 automobile cars with the Eastern Car Co., New Glasgow, N. S.

Swift & Co. have ordered 150 stock cars from the Illinois Car & Mfg. Co.

The Western Fruit Express is inquiring for 750 steel underframes for refrigerator cars.

The Burlington is inquiring for 500 mill-type gondola cars. The Kansas City, Mexico & Orient is inquiring for 150 box, 50 stock and 50 automobile cars.

The Northern Pacific is inquiring for 10 observation cars. The St. Louis-San Francisco is inquiring for 10 baggage cars.

The Chicago & Western Indiana is in the market for 280 steel underframes for ballast cars.

# European Markets Improving Steadily

Many Works Have Orders for Several Weeks' Work—  
Continental Steel Makers Cultivating American  
Markets—England to Build Cruisers

(By Cablegram)

LONDON, ENGLAND, Feb. 9.

PIG iron is steadier on the makers' firm stand [against reduction in prices] and some moderate sales of foundry grades for prompt deliveries have been effected. Export inquiry is improving, while consumers still are refraining from forward purchases. Hematite is unchanged, home and export demand continuing slow.

Increased activity is noted in foreign ore, but Bilbao Rubio is weaker, with sellers asking 21s. 6d. to 22s. (\$5.14 to \$5.26) c.i.f. Tees.

Finished iron and steel inquiry is broadening but the volume of business is still small. Makers are not keen sellers for forward delivery at current prices, while buyers are awaiting reductions. Concessions are obtainable on some prompt specifications.

It is reported that the Government intends to lay down [begin construction of] three additional light cruisers.

## Sheets and Tin Plate

Tin plate demand is broadening but makers-vs.-merchants questions still are unsettled. There is to be a further meeting Feb. 17. The Continent is displaying moderate interest. The Far East is much quieter. China is inquiring for oil sizes but no business has been traced.

Galvanized sheets are steady, with some makers well placed. Demand is sluggish and is confined to small parcels.

Black sheets are dull. Far Eastern specifications have been reduced 20s. with hopes to attract business. The price now of Japan 6 x 3 ft., 13's, 107 lb. is £18 (3.84c. per lb.) and 112 lb., £17 15s. (3.79c.), all net f.o.b.

## On the Continent of Europe

Continental markets are firm, though buying is restricted. Works' order books are well filled generally and makers display little anxiety to acquire fresh orders. Deliveries still are bad.

Wales has bought a fair line of basic pig iron at 73s. to 74s. (\$17.45 to \$17.69) f.o.b. India has bought hoops. There is a fair amount of Chinese inquiry but few orders materialize.

Continental makers are taking increased interest in American markets. The Société Anonyme des Laminaires, Hauts-Fourneaux, Forges, Fonderies et Usines de la Providence, Marchienne-au-Pont, Belgium, has booked 6000 tons of steel rails for Colombia. The Société Anonyme des Hauts-Fourneaux et Fonderies de Pont-a-Mousson, in France, is pushing [cast iron] pipe to the American continent. The Acieries et Usines Trebes de la Sarre, Burbach, Sarre district, has booked an order from the United States for seamless pipe to the value of 500,000 fr. (\$27,000).

## British Export Business Suffering from Continental Competition

LONDON, ENGLAND, Jan. 22.—There is no particularly predominant or strong feature about the iron and steel trades in this country at present. In the pig iron section a moderate demand has been experienced from home consumers recently, but where export trade is involved the turnover is much less satisfactory, which, of course, must be attributed mainly to the cheap prices prevailing on the Continent, which naturally preclude much demand reaching the Cleveland market.

As regards manufactured materials there is no particularly important demand apparent, the export inquiry being of a disappointing character. Of course, there are various railroad and Government orders about, which always give a certain amount of employment to the works here, but one would like to see some expansion in shipbuilding. During 1924 the ship output in Great Britain and Ireland was 1,439,885 tons gross register, or about 64 per cent of the total world's output, which amounted to 924 vessels of 2,247,751 tons gross.

It is reported here from Sao Paulo that the Sorocabana has placed orders for 59 locomotives, of which

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.78 per £1, as follows:

Durham coke, del'd..	£1 4s.		\$5.74
Bilbao Rubio ore†...	1 4		5.74
Cleveland No. 1 fdy..	4 5		20.31
Cleveland No. 3 fdy..	3 19		18.88
Cleveland No. 4 fdy..	3 18		18.64
Cleveland No. 4 forge	3 17		18.40
Cleveland basic .....	4 0		19.12
East Coast mixed....	4 6	to £4 6½s.	20.55 to \$20.67
East Coast hematite..	4 19	to 5 0	23.66 to 23.90
Ferromanganese .....	15 0	to 15 10	71.70 to 74.09
*Ferromanganese .....	15 0	to 15 10	71.70 to 74.09
Rails, 60 lb. and up..	8 10	to 9 0	40.63 to 43.02
Billets .....	7 0	to 8 0	33.46 to 38.24
Sheet and tin plate			
bars, Welsh .....	8 7½		40.03
Tin plates, base box..	1 3½		5.62
		C. per Lb.	
Ship plates .....	9 0	to 9 10	1.92 to 2.03
Boiler plates .....	13 0	to 13 10	2.77 to 2.88
Tees .....	8 17½	to 9 7½	1.89 to 2.00
Channels .....	8 2½	to 8 12½	1.73 to 1.84
Beams .....	7 17½	to 8 7½	1.68 to 1.79
Round bars, ¾ to 3 in.	9 2½	to 9 12½	1.95 to 2.05
Galv. sheets, 24 gage	17 0	to 17 5	3.63 to 3.68
Black sheets, 24 gage	12 10	to 12 15	2.67 to 2.72
Black sheets, Japanese			
specifications .....	15 5		3.25
Steel hoops .....	10 15	and 12 10*	2.29 and 2.67*
Cold rolled steel strip,			
20 gage .....	16 0		3.41

\*Export price.

†Ex-ship, Tees, nominal.

## Continental Prices, All F. O. B. Channel Ports

Foundry pig iron:(a)			
Belgium .....	£3 16s.		\$18.16
France .....	3 16		18.16
Luxemburg .....	3 16		18.16
Basic pig iron:(a)			
Belgium .....	3 13	to £3 14s.	17.45 to \$17.69
France .....	3 13	to 3 14	17.45 to 17.69
Luxemburg .....	3 13	to 4 14	17.45 to 17.69
Billets:(a)			
Belgium .....	5 7½	to 5 10	25.69 to 26.29
France .....	5 7½	to 5 10	25.69 to 26.29
Merchant bars:			
		C. per Lb.	
Belgium .....	6 0	to 6 5	1.28 to 1.33
Luxemburg .....	6 0	to 6 5	1.28 to 1.33
France .....	6 0	to 6 5	1.28 to 1.33
Joists (beams):			
Belgium .....	5 15		1.23
Luxemburg .....	5 15		1.23
France .....	5 15		1.23
Angles:			
Belgium .....	6 0	to 6 2½	1.28 to 1.31
¼-in. plates:			
Belgium .....	7 3½	to 7 7½	1.53 to 1.57
Germany .....	7 3½	to 7 7½	1.53 to 1.57
¾-in. ship plates:			
Luxemburg .....	7 3½	to 7 7½	1.53 to 1.57
Belgium .....	7 3½	to 7 7½	1.53 to 1.57

(a) Nominal.



Krupp has booked 40, the Richard Hartmann Co. (another German concern), 10, while the remaining 9 have been booked by the American Locomotive Co. It is understood that further orders are pending. It is reported also that the Paulista Railroad Co. has placed a large order for wheels in Germany. A great deal of interest has been aroused by the placing by the Ford interests of an order for rails in Belgium, which, it is understood, was taken at a price about \$6 per ton less than the American f.o.b. Pittsburgh quotation. Subsequently reports have been current that a further order has been placed by the same interest in Germany, but this cannot be confirmed, and it is probably a rumor arising out of the business already placed. It is stated that the Interborough Rapid Transit Co. also is negotiating for Belgian rails.

## BELGIAN AND LUXEMBURG IRON

### Market Improves in Spots—Luxemburg Ore Shipments Low—Belgian Coal Output Weak

BRUSSELS, BELGIUM, Jan. 23.—The Belgian heavy iron industry to some extent shared in the general recovery of late 1924. German iron-trade journals report persistent Belgian price undercutting, including the offer of steel rails in New York, including freight and duty, at as much as \$12 per ton below American prices. No commercial treaty has yet been signed between Belgium and Germany, and Belgium as exporter to Germany has ceased to enjoy the most-favored-nation privilege secured for five years by the Versailles Treaty.

The coal branch is worst occupied of all Belgian industries. A reduction of prices by 5 to 10 fr. a ton on Jan. 1 brought no help, and foreign competition continues. The iron and steel trade refuses to order domestic coal for any considerable time ahead, in view of pending reparations deliveries and cheap offers from France. English coal competition has slackened, but its place has been taken by Dutch. Although most of the mining concerns have reduced production, the stock of unsalable mined coal has increased. Reparations coal deliveries in the last quarter of 1924 were:

	Metric Tons
October .....	340,600
November .....	202,400
December .....	315,800

Reparations deliveries in all 1924 totalled 4,381,600 tons, against 1,574,300 tons in 1923 and 2,829,000 tons in 1922. The wages question is acute. The last agreement with the miners lapses on Feb. 1, and employers desire a further reduction.

After the first recovery in iron and steel, signs of stagnation set in. English competition is reported. The steel branch has improved as result of large State orders, the Ougrée-Marihaye concern getting a 10,000-ton order for railroad car construction. Germans report that their offers were 7,000 fr. per car higher than Belgian, and were, even without the high import duty, 1,000 fr. higher. The steel rail branch is, after bars, the most important factor in Belgium's steel industry, accounting for 217,000 tons out of 1,770,000 tons of steel produced in 1923, bars being 547,000 tons.

The comparative activity of the smelting branch in both Belgium and Luxemburg is:

	Blast Furnaces	
	In All	In Operation
Jan. 1, 1925.....	56	50
Jan. 12, 1924.....	56	50
Jan. 1, 1913.....	55	49

Eight of the 56 blast furnaces, all in operation on Jan. 1, are in Luxemburg, 20 in the Liege district of Belgium, and 28 in Hennegau and Brabant. Production in the last reported months was (in metric tons):

	Pig Iron	Raw Steel	Finished Steel
1924			
September .....	228,750	227,930	192,970
October .....	246,240	248,910	215,090
November .....	216,613	210,350	181,630

In the market for rolled goods buyers have of late shown reserve, in the expectation that they could depress prices. In connection with the pending German commercial treaty negotiations, the organs of the

electric-power industry protest against the existing high duties on German electro-technical products. Belgium's greatest present economic problem is electrification. Belgium, however, cannot supply herself with electrical machinery and plant. As result of the special duties which were imposed during the "exchange dumping" era installation materials, cables and meters are abnormally dear.

Luxemburg's metallurgical industries improved in 1924, so far as output is concerned. An influence in the increase was the desire to draw profit from the expiring right of duty-free import into Germany. Production was:

	Metric Tons	
	Pig Iron	Steel Ingots
1924 (approximately) ..	2,150,000	1,850,000
1923 .....	1,406,666	1,193,471
1922 .....	1,679,318	1,387,903

Luxemburg's iron-ore mining industry is in a bad condition. Production is irregular and many of the mines are not worked during part of the year. The reason is that, owing to the rise in coal prices since 1913, it is unprofitable to smelt ore low in iron contents, even though this ore, being on the spot is extremely cheap. The much richer, and not distant, ore of the Briey basin is preferred. In 1911 Germany imported 500,000 tons of Luxemburg ore; in 1923, as result of increased freight rates, only 28,000 tons. Belgium's imports in the same years fell from 1,300,000 tons to 742,000 tons. The decay of the Luxemburg ore branch is manifest from the following (in metric tons):

	Output	Consumed at Home	Exported
1913.....	7,333,400	4,424,850	2,906,300
1923.....	4,097,540	2,534,786	1,144,423

## GERMANY RESUMES 8-HR. DAY

### Steel Industry Is Opposed—No Agreement Yet with France—Prices a Little Higher

BERLIN, GERMANY, Jan. 26.—Although strongly conservative in composition, the new Luther cabinet has hesitated so far in its industrial program from irritating socialists and radicals. This policy results from the cabinet's weakness in the Reichstag, in particular from the fact that the progressive group in the center party, while not openly hostile, threatens to oppose at the first signs of reaction.

To propitiate the left parties, Dr. Luther has announced a scheme of federal unemployment insurance (hitherto such insurance has been local and partial); and has further restored the three-shifts-a-day (8-hr.) system in the smelting and cokeries branches. The latter step is bitterly opposed not only by the "heavy industry," but even by progressive authorities like the former radical Minister of the Treasury Dr. Gothein, who points out that, whereas in 1919 and 1920 per capita production in the smelting industry fell to 38 per cent of the pre-war figure, it gradually recovered and last year, after the legalization of the 10-hr. (two-shift) system, reached the pre-war figure. The reparations settlement, he adds, depends upon retention of the 10-hr. day. "German workmen of nearly all parties voted in favor of the Dawes plan. It was made fully clear to them that the plan could be fulfilled only by means of increased work. If workmen do not wish to earn the reproach of insincerity, they must act according to their vote."

### Commercial Arrangement with France Lags

No commercial treaty, or even provisional agreement, has yet been concluded with France, although temporary arrangements of various kinds have been come to with nearly all other ex-enemy nations. Until lately the opposition between German iron producers and iron consumers was believed to be an obstacle. The consuming manufacturers opposed the pig iron and steel magnates' demand for an increase in import duties, and distrusted the latter's design to control the whole importation of French pig iron. Paris newspapers today however publish the text of an agreement

alleged to have been signed Dec. 18 between the leaders of the producers and of the manufacturing consumers. On condition that protection is granted for heavy iron and steel, the producers undertake to grant refunds to the manufacturers on all iron and steel used in producing goods for export. The refunds will be equal to the difference between the German domestic iron and steel prices and the prices prevailing in the world market and will be paid out of a special producers' fund.

In the pending commercial treaty negotiations with France the German producers' representatives will attempt to secure the minimum French import duties for German finished goods. The quantity of the ration or "contingent" of iron which Germany is to accept out of France's superfluous production will not be fixed in the commercial treaty, but in later private negotiations between the two iron industries. The signatures of Fritz Thyssen, Kloeckner, Koenigter, von Raumer and other important men in the producing and consuming branches are attached to this agreement. It involves a repetition of the pre-war system, under which German metal goods were sold abroad cheaper than at home. This inevitably arises out of the condition that the consuming manufacturers are to get cheap iron and steel only for production of export goods.

#### Coal Production Better Than in 1923

The coal situation has somewhat improved, particularly in the South-Ruhr district. Production last year was as follows, the figures for 1913 being for production in the present German area:

	Thousands of Metric Tons		
	1924	1923	1913
Coal .....	118,830	62,220	140,750
Lignite .....	124,360	118,250	87,230
Coke .....	23,720	12,700	31,670

In 1913 in the "then" area coal production was 190,110,000 tons, coke 34,630,000 tons. Large coal orders have been received from Sweden and Italy, and in England the question of German competition has become acute. That coal exports, although still small, have begun to increase is shown by the fact that of 1,906,000 tons exported in January to November inclusive, 640,000 tons, or one-third, were exported in November.

The market for most kinds of heavy iron and steel has been good, but the improvement is less rapid than was expected. Prices are firm and slightly upward, the exception being scrap, which has had a reaction after an exaggerated rise. Steel scrap has sunk from 87 marks (\$21.05) to about 81 marks (\$19.60). Average prices on Jan. 24 were:

	Marks Per	Per
	Metric Ton	Gross Ton
Blooms .....	120	or \$29.04
Billets .....	127.50	or 30.85
Slabs .....	132	or 31.94
		Per Lb.
Bars .....	140 to 142	or 1.51c. to 1.54c.
Structural forms.....	134 to 137	or 1.45c. to 1.48c.
Thick sheets .....	150 to 155	or 1.62c. to 1.67c.
Medium sheets (3 to 5 mm. or No. 11½ to No. 6½ gage) .....	185	or 2.00c.
Thin sheets (1 to 3 mm.) Thin sheets (under 1 mm. or No. 19½ gage) .....	220 235	or 2.39c. or 2.54c.

#### Steel Prices Slightly Higher

Smelters complain that scrap prices, which ought to be about 50 per cent of the ex-works price of bars, are still too high. Owing to the increased demand, the Steel Syndicate has reduced the production limitation from 20 per cent to 10 per cent, this to hold good until the end of February. Solingen steel producers complain that Austrian and Czech wares of equal quality are being sold at 20 to 30 per cent cheaper. The tube market has improved greatly, in particular the export market. The export market for heavy iron and steel has not improved materially. Reports of sharp underselling by Belgians seem to be well founded. The railroad-car construction branch is still in a bad way. The number of car-construction concerns is twice as great as before the war. Of late, first under pressure of foreign control, later under credit pressure, hardly any state orders have been received and no improvement is expected.

To prevent unemployment in the shipyards, the

Government has promised to grant construction loans, putting up, half the cost of construction of ships on condition that the commissioning shipping company puts up the other half, and charging only 4 to 6 per cent interest. The loans will be provided out of existing unemployment relief funds. The food ministry is about to arrange state credits for increased production of motor-plows. Manufacturers of typewriters and calculating machines are agitating for increased duties. At present they are protected by import prohibitions, but these will soon cease. The former export prohibition and later the export duties seriously injured Germany's foreign market and at present the production capacity far exceeds selling possibilities.

## ROUMANIAN IRON AND STEEL

### Ore Production Increasing—Eight Blast Furnaces at Work—Country Can Produce 45 Per Cent of Needs

BUCHAREST, ROUMANIA, Jan. 15.—With the excen-tion of Bessarabia, all the new provinces of Roumania have proportionately a somewhat larger industrial popu-lation than the pre-war Roumanian kingdom. Rou-mania's main industrial gain from her territorial in-crease is an ore basis for the development of a con-siderable iron and steel industry. Before the war Rou-mania had neither ores nor coking coal. By the Peace Treaty she acquired from Hungary coal fields, ore fields and the heavy-iron concerns of Hunyadvar (now Hunedioara) and Reschitza, whose maximum annual output capacity is 260,000 metric tons of pig iron, 150,000 tons of steel, and 150,000 tons of rolled goods. The last official report enumerates 305 "iron and steel works" with invested capital of 289,116,000 gold lei, but this includes the smallest concerns. The actual output is much less than above mentioned, and is less than the pre-war output, being:

	Metric Tons	
	1923	1922
Pig iron .....	50,948	29,404
Steel .....	80,500	66,212
Rolled iron and steel .....	45,122	45,268

Explored iron ore fields of Roumania, according to an official report, contain 6,120,000 tons, but the assumed contents of all fields is 24,000,000 tons, counting only ores which are economically smeltable. About half the supply belongs to the State.

Under favorable conditions Roumania could herself supply about 45 per cent of her consumption of iron, steel and semi-finished goods. In 1922 the importation of machinery and metals was 275,000 metric tons, of value about 95,000,000 gold lei, which constituted 50 per cent by weight and 40 per cent by value of the total imports. Roumania's annual consumption is 650,000 tons of iron products, the home production of which from native materials would exhaust the native ore supplies in 12 to 15 years. To avoid this it is suggested that the new tariff admit raw materials free, while semi-finished and finished iron goods should enjoy effective protection.

Ore production in the State-owned mines of Hune-dioara in Transsylvania is increasing, being 57,000 tons in 1923 against 43,300 tons in 1921. The surface ore here has an iron content of 50 per cent. The ore fields of Dognecea and Ocna de Fier in the former Hungarian Banat, which are owned by the Reschitza Corporation, produce annually about 40,000 tons of magnetite and hematite ores, with 56 to 58 per cent iron, 0.75 to 0.64 per cent manganese, 0.06 to 1.12 per cent sulphur, and 0.04 to 0.07 per cent phosphorus. A third source of ore is Lueta in the County of Odorhei in Transsylvania, iron contents 25 to 35 per cent. Only about 2500 tons are mined, but increase is possible.

Total ore output of all Roumania was 99,293 tons in 1923, against 94,607 tons in 1922 and 91,109 tons in 1921. All the ore is consumed at home. The Trans-sylvania ores go to the State smelting works of Hunedioara and Govodjia, with five and one blast fur-naces respectively. The Govodjia furnace is being used for experiments in smelting with crude petroleum in-



stead of charcoal or coke. With exception of the petroleum experiment, charcoal is used of late, owing to the lack of coke. The suggestion to smelt with methane gas has been made, the supply being abundant. The Banat ores are consumed in two blast furnaces of the Reschitza Co. at Reschitza and Anina. The company's third blast furnace is not operated.

Only a few of the manganese ore fields are being worked. The Banat ore field of Ocna de Fier, owned by the Reschitza Co., produced 8520 tons of ore in 1923. The manganese mine at Maschea in the County of Solnoc-Dobaca produced 3500 tons of manganese ore in the same year. The State-owned mine at Jacobeni in Bukovina produces very little. The content of the ores in MnO<sub>2</sub> varies between 30 and 75 per cent.

## BELGIAN WORKS WELL FILLED

Orders on Hand for Several Weeks, but Demand Slackens—Foreign Competition Less Troublesome

ANTWERP, BELGIUM, Jan. 21.—Most of the works are well provided with orders, perhaps for several weeks, and several makers have retired entirely from the market. But demand is no longer so large and the number of orders placed much smaller. As a result the market shows some hesitation, not that the situation appears weaker, but one cannot distinguish whether prices will go higher or lower, foreign competition (especially German and Luxemburg offers) is not too strong. In the meantime prices seem not to satisfy exporters, as they are not sufficiently low to attract orders.

**Finished Steel.**—Especially steel products are in a slightly firmer position. Prices are the same. Notwithstanding lack of orders, makers maintain former quotations, approximately, for good orders f.o.b. Antwerp, per metric ton, and with American equivalent, as follows:

	Fr.	Per Lb.
Bars .....	570 or \$28.50 or 1.29c.	
Beams .....	540 or 27.00 or 1.22c.	
Rods .....	695 or 34.75 or 1.58c.	
Corrugated bars .....	635 or 31.75 or 1.44c.	
Hoops .....	800 or 40.00 or 1.81c.	
Cold rolled steel hoops .....	1,100 or 55.00 or 2.50c.	
Drawn steel, squares .....	1,050 or 52.50 or 2.39c.	
Drawn steel, rounds .....	1,025 or 51.25 or 2.32c.	
Drawn steel, hexagons .....	1,125 or 56.25 or 2.55c.	
Spring steel .....	1,050 or 52.50 or 2.39c.	
Rails .....	700 or 35.00	
Wire rods .....	685 or 34.25	

Beams remain low. The highest quotation, suitable for business, is certainly not higher than £5 12s. 6d. f.o.b., Antwerp, equal to 538 fr. or 1.20c. per lb., a price which is even higher than the reported French prices. Per contra, rods and wire rods are pretty firm. A large demand for these commodities caused a new increase of price. The price of £6 (1.28c. per lb.) for bars is general. Only for large business and favorable specifications could a low quotation such as £5 18s. 6d. have been obtained. These prices seem, however, somewhat too high, as quotations on the London market are slightly lower. On the other side, the price asked by the Germans is £6 2s. 6d. or 1.31c. per lb.

**Billets.**—Prices for semi-finished products are:

	Fr.
Thomas billets .....	520 or \$26.00
Thomas blooms .....	500 or 25.00
Thomas targets .....	535 or 26.75
Steel bands .....	700 or 35.00

Almost none of these products is available. Prices offered from abroad are from 1s. to 2s. lower than the above, which, however, are certainly minimum. They represent for billets 108s. (\$25.81), when English buyers are disposed to purchase at not more than 105s. to 106s. (\$25.10 to \$25.34), as a maximum.

**Iron.**—On account of the high prices for scrap, also considering the limited demand, business for iron commodities is difficult. Makers' position is worse than ever. They have to allow further concessions when

their producing costs increase. Prices per ton, f.o.b. Antwerp, run as follows:

	Fr.
Commercial iron No. 2 .....	600 or \$30.00
Commercial iron No. 3 .....	615 or 30.70
Commercial iron No. 4 .....	630 to 31.50

**Sheets.**—Demand for heavy sheet material continues favorable and this class of commodity is extremely firm. Much business develops even at prices such as £7 2s. 6 d., i. e. \$34.25 or 1.53c. per lb., f.o.b., Antwerp, and for thinner sheets, namely ¼-in. (3.175 mm.) £7 12s. 6d., equaling 730 fr. or \$36.50 (1.63c. per lb.) also f.o.b. Antwerp. Approximate prices per gross ton are as follows:

	Fr.	Per Lb.
Thomas sheets, 0.5 mm. (No. 25 ½ gage) .....	1,250 or \$62.50 or 2.79c.	
Thomas sheets, 1 mm. (No. 19 ½ gage) .....	1,150 or 57.50 or 2.57c.	
Thomas sheets, 2 mm. (No. 14 gage) .....	860 or 43.00 or 1.92c.	
Thomas sheets, 3 mm. (No. 11 ½ gage) .....	730 or 36.50 or 1.63c.	
Thomas sheets, 5 mm. (No. 6 ½ gage) .....	685 or 34.25 or 1.53c.	
Galvanized sheets, 0.5 mm. ....	1,700 or 85.00 or 3.80c.	
Galvanized sheets, 1 mm. ....	2,300 or 115.00 or 5.13c.	
Polished sheets average price .....	1,650 or 82.50 or 3.68c.	

**Pig Iron.**—Demand both for the export and for the country is sufficient, especially for the phosphoric quality No. 3. The price ruling is 360 to 365 fr., i. e., \$18 to \$18.50 per ton, f.o.b. Antwerp. Foundry iron with phosphorus under 1 per cent is quoted at 390 to 400 fr., i. e., up to \$20, this for the first grade, Si 2.75 to 3.25 per cent. English East Coast hematite is sold at 92s. 6d. to 93s. 6d. per ton c.i.f. Antwerp. The actual demand, however, is not large.

**Coke.**—The coke market is unchanged. Furnace coke supplied by the syndicate is quoted 145 fr. per ton, or \$7.25.

## GERMAN STEEL PRODUCTION

Ingots and Pig Iron Made in 1920, 1921, 1922, 1923 and 1924 Exceed Estimates—Publication of Figures Resumed

BERLIN, GERMANY, Jan. 26.—The Verein Deutscher Eisenindustrieller has resumed publication of production statistics, which was suspended during the war, and suspended a second time in October, 1919, since which date only estimates have been issued. The following figures are correct data, not estimates:

	Metric Tons	
	Pig Iron	Steel Ingots
1920 .....	6,400,000	8,540,000
1921 .....	7,850,000	9,990,000
1922 .....	9,390,000	11,720,000
1923 .....	4,720,000	6,020,000
1924 (Nine months only) .....	5,390,000	6,860,000

Dr. Reichert, secretary of the Steel Manufacturers' Association, puts pig iron producing capacity at higher than any of the above figures, and says that the combined quotas of steel, totaling 13 ½ million tons, in the schedule of the new Raw Steel Association, are far below the real capacity. Another writer puts full steel-production capacity at 17 million tons, or only a little below the maximum pre-war annual output. According to Dr. Reichert, the current belief that Germany cannot do without French iron is untrue. Although she has been importing pig iron, semi-finished steel, bars, etc., since the war, the amount imported has declined steadily. Germany's annual need of pig iron, including material for export goods, Dr. Reichert puts at 8 ½ to 9 million tons, but she could easily produce 12 million tons, and, in fact, was producing at that rate in November, 1924. Assuming sufficient home and foreign demand, she could produce enough iron to export annually at least 1 ½ million tons.

Wholesale prices in France are reported for December at 518, compared with 100 as the basis in July, 1914. Foodstuffs were much below the average, the different groups ranging from 420 to 457 in December, while minerals and metals were 523 and textiles 722. Nearly all of these items were lower in December, 1923, when the average stood at 468.

# Iron and Steel Markets

## SLIGHT FALLING OFF

### Youngstown Steel Works at Lower Rate of Operation

#### Pipe Lines Take 150,000 Tons—Complaint of Pig Iron Dumping

The Steel Corporation's 220,000-ton gain in unfilled orders in January and the report of the country's 13 per cent increase in daily rate of steel ingot production last month, made public on Tuesday, were both in line with forecasts. Of more moment to the steel trade are the current rate of new buying, the percentage of the present output of steel that is going into consumption, and the extent to which recent price advances can be established.

The past week has thrown little new light on these three points. The price announcements have added to the volume of specifications on business booked at \$2 to \$6 a ton below the new levels, but new demand is somewhat less than the January average. It appears also that the Steel Corporation's January gain in orders was above the average for the industry.

While the Corporation continues to operate at 94 per cent of capacity, some reductions in schedules have been made by independent companies at Youngstown, bringing down the general average in the Pittsburgh and nearby districts to about 5 per cent under that of the second half of January.

The Chicago district, however, keeps up its remarkable pace, which pulled up the average for the country to 89 per cent of ingot capacity in January. The two leading producers there are running full, and with the blowing in of a third blast furnace at Joliet all but one out of 34 steel works furnaces in the Chicago territory are active.

Following the building up of manufacturing buyers' stocks with low-priced steel, under the large scale shipments since Jan. 1, it is expected that some weeks will be required for testing out the advances. Consumers now want to see how much the demand will increase for their own products.

Railroad demand is better than in several weeks. Including 1825 cars for the Minneapolis & St. Louis, 1000 for the Lackawanna, 1000 for the Union Pacific and 500 for the Mexican Petroleum Co., new contracts take in 4725, the largest week's total in some months. In addition, orders for 500 were placed in Canada for roads there.

The Rock Island's rail order has come out this week, a total of 45,000 tons, of which the Illinois Steel Co. will furnish 37,845 tons and the Inland and Colorado mills the remainder. The B. & O. is inquiring for 25,000 tons of rails and one million tie plates.

Canadian rail mills, after months of waiting, will soon be busy. For 280 miles of double tracking between Fort William and Winnipeg, the Canadian Pacific will place orders for 100-lb. rails with the Algoma mill—about 88,000 tons. Large rail

contracts for the Canadian National Railways are to be divided also between the Sydney and Algoma mills.

Due to activity in oil lines pipe mills are coming into a better operation and the National Tube Co. has started up its Riverside plant, inactive for months. The 41,000 tons of 10-in. pipe for the Andean Corporation's line in Colombia, South America, is just now reported, but the Steel Corporation had the order on its books in December. Including the Houston Oil Co. line and the Pure Oil Co.'s contract, also for Texas, line pipe booked in the past two months amounts to 150,000 tons.

Reports covering the larger structural steel projects show bookings for the first ten days of February to be 15 per cent under the rate of January, but the tonnage of fresh inquiries is somewhat above the January average.

In carefully limiting their buying to early needs the automobile companies at Detroit aim to prevent any excess manufacture. As against a much smaller automobile demand than last year's at this time, current shipments of steel to farm implement works show a considerable increase.

Some makers of sheet bars have a greater supply above their own sheet mill requirements than had been counted on and the price has eased off another dollar a ton.

The continued arrival of foreign pig iron at Eastern ports, particularly Boston, has aroused blast furnace operators in Eastern States, who are responsible for the Government's cable inquiry to determine whether the anti-dumping law is being violated by European sellers. Foreign competition has deprived Buffalo iron of some of its Eastern customers and has caused Buffalo makers to seek a market in the Pittsburgh district. Inquiry for pig iron in the New York and Cleveland markets has improved within a few days, but in nearly all centers the demand is light and prices are maintained with difficulty.

The week has made no change in either of THE IRON AGE composite prices. Finished steel remains at 2.546c. per lb., as last week, while pig iron, for the fifth successive week, stands at \$22.50 a ton.

## Pittsburgh

### Production Slightly Reduced—Recent Price Advances Still Untested

PITTSBURGH, Feb. 10.—The first evidence that the recent rate of steel production was too heavy to be maintained comes this week in a reduction in operations in the Youngstown district which, together with somewhat less pressure to get out tonnage in this and nearby districts, has brought down the general producing average about 5 per cent from where it was in the last two weeks of January. Coming so soon after prices had been advanced, it is apparent that either the response to the higher levels in the shape of tonnage releases has not come or that during the recent period of large



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At date, one week, one month, and one year previous

### For Early Delivery

Pig Iron, Per Gross Ton:	Feb. 10, 1925	Feb. 3, 1925	Jan. 13, 1925	Feb. 12, 1924
No. 2X, Philadelphia...	\$25.01	\$25.01	\$25.01	\$24.13
No. 2, Valley Furnace...	22.00	22.00	22.50	23.00
No. 2, Southern, Cin'tif...	24.05	24.05	24.05	26.55
No. 2, Birmingham, Ala.†	20.00	20.00	20.00	22.50
No. 2 foundry, Chicago*	24.00	24.00	24.00	24.50
Basic, del'd, eastern Pa...	23.75	24.25	24.25	22.75
Basic, Valley furnace...	22.00	22.00	22.00	22.00
Valley Bessemer del. P'gh.	24.76	24.76	24.76	25.26
Malleable, Chicago*	24.00	24.00	24.00	24.50
Malleable, Valley .....	22.00	22.00	22.50	23.00
Gray forge, Pittsburgh...	23.26	23.26	23.76	23.76
L. S. charcoal, Chicago...	29.04	29.04	29.04	29.15
Ferromanganese, furnace...	115.00	115.00	110.00	107.50

### Rails, Billets, Etc., Per Gross Ton:

O.-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$43.00
Beas. billets, Pittsburgh...	37.00	37.00	37.00	40.00
O.-h. billets, Pittsburgh...	38.00	38.00	38.00	40.00
O.-h. sheet bars, P'gh. ....	38.00	39.00	39.00	42.50
Forging billets, base, P'gh.	42.50	42.50	42.50	45.00
O.-h. billets, Phila. ....	41.67	41.67	41.67	45.17
Wire rods, Pittsburgh....	48.00	48.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	2.10	2.10	2.00	2.30
Light rails at mill. ....	1.80	1.80	1.80	2.00

### Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.28	2.28	2.28	2.57
Iron bars, Chicago. ....	2.00	2.00	2.00	2.40
Steel bars, Pittsburgh....	2.10	2.10	2.10	2.40
Steel bars, Chicago. ....	2.20	2.20	2.10	2.50
Steel bars, New York....	3.44	2.44	2.44	2.74
Tank plates, Pittsburgh...	2.00	2.00	2.00	2.50
Tank plates, Chicago....	2.30	2.30	2.20	2.60
Tank plates, New York....	2.34	2.34	2.34	2.69
Beams, Pittsburgh .....	2.10	2.10	2.10	2.50
Beams, Chicago .....	2.30	2.30	2.20	2.60
Beams, New York. ....	2.44	2.44	2.34	2.74
Steel hoops, Pittsburgh...	2.50	2.50	2.50	3.00

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.  
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

Sheets, Nails and Wire,	Feb. 10, 1925	Feb. 3, 1925	Jan. 13, 1925	Feb. 12, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.60	3.85
Sheets, black, No. 28, Chicago dist. mill. ....	3.70	3.70	3.70	...
Sheets, galv., No. 28, P'gh.	4.75	4.75	4.75	5.00
Sheets, galv., No. 28, Chicago dist. mill. ....	4.85	4.85	4.85	...
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	2.70	3.00
Sheets, blue, 9 & 10, Chicago dist. mill. ....	2.80	2.80	2.80	...
Wire nails, Pittsburgh....	2.85	2.85	2.85	3.00
Wire nails, Chicago dist. mill. ....	2.95	2.95	2.95	...
Plain wire, Pittsburgh....	2.60	2.60	2.60	2.75
Plain wire, Chicago dist. mill. ....	2.70	2.70	2.70	...
Barbed wire, galv., P'gh.	3.55	3.55	3.55	3.80
Barbed wire, galv., Chicago dist. mill. ....	3.65	3.65	3.65	...
Tin plate, 100 lb. box, P'gh.	\$5.50	\$5.50	\$5.50	\$5.50

### Old Material, Per Gross Ton:

Carwheels, Chicago .....	\$19.50	\$19.50	\$22.50	\$21.00
Carwheels, Philadelphia ..	19.50	19.50	19.50	21.00
Heavy steel scrap, P'gh....	\$0.00	20.50	22.00	22.00
Heavy steel scrap, Phila....	18.00	18.00	20.00	19.00
Heavy steel scrap, Ch'go....	17.50	17.50	20.50	18.00
No. 1 cast, Pittsburgh....	20.50	20.50	19.50	21.50
No. 1 cast, Philadelphia....	19.00	19.00	20.50	21.00
No. 1 cast, Ch'go (net ton)	18.50	18.50	20.50	21.00
No. 1 RR. wrot. Phila....	\$0.00	20.50	21.00	22.00
No. 1 RR. wrot. Ch'go (net)	16.00	16.00	18.00	15.50

### Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$3.75	\$2.75	\$4.00	\$4.00
Foundry coke, prompt....	4.85	4.50	5.00	4.75

### Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	15.12 1/2	15.00	15.25	12.75
Electrolytic copper, refinery	14.02 1/2	14.37 1/2	14.87 1/2	12.50
Zinc, St. Louis. ....	7.55	7.50	7.87 1/2	6.72 1/2
Zinc, New York. ....	7.90	7.65	8.22 1/2	7.07 1/2
Lead, St. Louis. ....	9.87 1/2	9.50	10.35	8.85
Lead, New York. ....	9.55	9.75	10.60	8.90
Tin (Strait), New York...	57.12 1/2	56.75	59.80	52.00
Antimony (Asiatic), N. Y.	20.00	18.00	17.50	10.50

## THE IRON AGE Composite Prices

### Feb. 10, 1925, Finished Steel, 2.546c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	Feb. 3, 1925, 2.546c. Jan. 13, 1925, 2.560c. Feb. 11, 1924, 2.789c. 10-year pre-war average, 1.689c.
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### Feb. 10, 1925, Pig Iron, \$22.50 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	Feb. 3, 1925, \$22.50 Jan. 13, 1925, 22.50 Feb. 11, 1924, 22.84 10-year pre-war average, 15.72
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High,	Low	High,	Low
1923	1924	1925	1923
2.824c., April 24	2.759c., Jan. 15	2.560c., Jan. 6	2.546c., Feb. 3
\$30.86, March 20	\$22.88, Feb. 26	\$22.50, Jan. 13	\$19.21, Nov. 3
			2.446c., Jan. 2
			\$20.77, Nov. 20

output buyers were able to build up their stocks and are now disposed to wait on secondary demand before they make any further commitments.

There has been no serious test of the market on plates, shapes and bars at 2.20c. and not much second quarter sheet business has come out at the higher prices announced a week ago for that period. It is the experience of wire manufacturers that while there were a good many belated specifications on contracts made \$4 a ton below the prices recently announced and that there was fairly liberal contracting at the prices ruling just before the last advance, a number of consumers are pretty heavily stocked and that specifications against nails at \$2.85 and wire at \$2.60 are not very heavy.

The price situation is the most unusual in recent years in that market quotations are so much higher

than the prices at which the current deliveries are being billed. In 1924 the buying movement in finished materials ended about two months earlier than it did in 1923 and the revival in business came about two months earlier than in the previous year. The present lull comes about two months earlier than did that of last year. The steel industry again has demonstrated its ability to speed up production to a point equal to any domestic demands made upon it and there is little question that this showing has made an impression upon buyers. The time element has been an important one in connection with no small part of the business that filled the mill order books for this quarter. The big business came in railroad and structural steel and there has been no real pressure for delivery from either source. The rail laying season is a long one and the demand for transportation facilities has

not taxed the railroads to the point that they have found urgent need of new cars. Meanwhile, no small part of the structural business placed late last year is being held up by investors for more favorable weather conditions.

The automotive industry has not provided the usual amount of steel tonnage and until the last week or two there has not been much business from the oil industry. A good deal of line pipe business lately has come on the market, but oil storage tank business amounts to little because oil stocks are being reduced and, if anything, there is a surplus of storage capacity. Almost 150,000 tons of line pipe business has been closed in the past few weeks.

There seems to be a supply of sheet bars now that manufacturers did not figure they would have during this quarter and the price has eased off another dollar a ton. The scrap market continues to seek lower levels and recent developments in the pig iron market are not favorable to the higher prices. There is an ample supply of coke and with continued talk of a revision downward of wages in the Connellsville district, the pig iron market does not have the support of a possible high price for fuel. The continued indifference of melters is another depressing influence.

**Pig Iron.**—The market here is extremely limited. Melter appear to have very amply covered their first quarter requirements in their purchases of last November and as actual consumption has been below expectations, there is little doubt that there will be some carry over into the second quarter of the year. Buffalo iron has begun to appear in consuming districts that ordinarily are served from Valley furnaces, this being explained by the competition Buffalo furnaces are having in the East from imported iron. Some Valley furnaces still have a price of \$22.50 for No. 2 foundry, but the number of makers willing to take business at \$22 has grown since a week ago and prices higher than that are no longer readily obtainable. Asking prices of more than \$22, Valley furnace, for basic iron and \$23 for Bessemer have disappeared. Interest in the steel-making grades is very low. The fact that there are about 80,000 tons of iron on the yards of the Struthers Furnace Co., now in a receivership, is somewhat disturbing to other producers, but the word from the receiver is that this iron is to be marketed in such fashion as to insure as high as possible return on it, and it is believed that sales will be made in small monthly amounts until the stock is liquidated.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$22.00
Bessemer .....	23.00
Gray forge .....	\$21.50 to 22.00
No. 2 foundry .....	22.00 to 22.50
No. 3 foundry .....	21.50 to 22.00
Malleable .....	22.00 to 22.50
Low phosphorus, copper free....	29.00

**Ferroalloys.**—Consumers in this and nearby districts being well covered by contracts on the various ferroalloys, current business is chiefly in specifications and there is almost no new business. There is close observance of quotations, but no real test of them is possible with the demand as limited as it is. German ferromanganese, guaranteed to run 78 to 82 per cent manganese, is offered as low as \$110, Atlantic seaboard, duty paid, but is not attracting buyers, for while the price is \$5 a ton below the price of domestic and British material, it is above the average price on tonnages already contracted for. Prices are given on page 525.

**Semi-Finished Steel.**—The advance in wire products, as announced late last week by the American Steel & Wire Co., embraces wire rods, which now are quoted by that company at \$50, base, Pittsburgh or Cleveland, and \$52, Chicago. The independent makers did not include rods in their advances announced a week ago, but probably will do so now that the larger producer has taken the step. Such business as has been done in the past week, however, has been at the former price of \$48, base, Pittsburgh, and like the new wire products prices, the \$50, base on rods, is yet to find basis in

sales. On billets, slabs and sheet bars, the market is not extremely firm, except in the case of the Carnegie Steel Co., which seldom has any semi-finished steel beyond the requirements of a few regular customers and is not much of a factor in open market business. The \$40 price on sheet bars has disappeared except for the nominal quotation of that company. Other producers are offering open-hearth sheet bars at \$39, Pittsburgh, and a quotation of \$38 has been made in the past two days, making the market quotable at \$38 to \$39 on the basis of offerings, buyers being too well supplied to be interested enough to make a bid. Forging billets are quoted at \$45, base, by the two makers in this district, but \$42.50 to \$43 is more representative of today's possibilities. There has been a substantial decrease in the ingot production in Youngstown and with some easing in steel works activities here, the general average of the two districts now is not over 85 per cent of capacity as against 90 per cent in the last half of January.

**Iron and Steel Bars.**—The recent price advance in steel bars evidently was for the dual objective of bringing in specifications against lower priced orders and acquainting consumers with makers' ideas as to second quarter tonnages. Mills in this district now appear to have enough "live" business to keep them busy over the remainder of this quarter, but by the same token, consumers are well covered against their requirements for the same period and while 2.20c., base, Pittsburgh, is quoted for current as well as second quarter delivery, it is not yet established by sales of any consequence. It is too soon for buyers to be in the market for second quarter tonnages, since the present quarter has not provided a definite idea of the probable consumptive demands of the three months beginning April 1. The real test of the new price is probably about 30 days away. The quotable market is 2.20c., chiefly because there is no evidence that less is being named. Iron bars are firm at recent prices. Prices are given on page 524.

**Structural Material.**—It has been a fairly good week for local fabricating shops so far as Pittsburgh district business is concerned, a total of 3500 tons being in a new mill building and an extension to the local National League baseball park grandstand. The new price of 2.20c., base, for large structural beams still is untested, since fabricating companies were given liberal protection at much lower prices late last year and there has not been much business outside of that on which protection was given. The fabricating shops still are "hungry" for early delivery business and fabricated steel prices still are being figured on lower costing steel than now is available. Plain material prices are given on page 524.

**Plates.**—Local mills are quoting 2.20c., base, Pittsburgh, but are not yet getting much business at that figure and when they go east 2.10c. is all they can get. The local makers are well supplied with railroad car business and the leading producer will be called on to supply rather big tonnages of sheared and universal plates in connection with some large line pipe orders recently placed and near the closing stage. There is about 50,000 tons of plates in one order that is about to close and 40,000 tons in one recently closed. Tank inquiries, however, are few. Prices are given on page 524.

**Wire Products.**—The American Steel & Wire Co., effective Feb. 6, advanced prices \$2 a ton, following the advance made a day or two previously by independent producers. All companies now are on a base of \$2.95, base, per keg, Pittsburgh or Cleveland, on nails, and \$2.70, base, per 100 lb. on plain wire, at Pittsburgh or Cleveland, with the usual differentials at other points. The common report is that a good deal of unspecified business at lower prices came out on this advance and that a good many contracts at \$2.85 for nails and \$2.70 for plain wire were entered. Jobbers appear well stocked with material at lower prices and are not yet specifying very freely on contracts just placed, but mills have enough business to keep up production and figure on increased consumption with the approach of spring to bring in specifications before present orders are worked out. Prices are given on page 524.

**Tubular Goods.**—Activity in line pipe still engages



attention. The Pure Oil Co. is reported to have closed for an additional 135 miles of 8-in. pipe for a Texas line, supplementing 60 miles of the same size placed a few weeks ago. The Houston Oil Co., reported a week ago as arranging the financing of a gas line in Reagan County, Texas, is reported to have placed the order, which calls for 200 miles of 16-in., 18-in. and 20-in. plain end pipe, or between 50,000 and 60,000 tons, while the 350-mile 10-in. line for the Andean Corporation, line pipe subsidiary of the International Petroleum Co., also is said to have been closed lately. This order amounts to about 40,000 tons. Taking in the Marland-Humble line reported last week, the total line pipe business of the past few weeks foots up close to 150,000 tons. The rising tendency of oil prices is finding some reflection in a more active inquiry for oil country pipe and in the meantime the demand for pipe for construction purposes holds good. Boiler tubes find a fair sale.

**Sheets.**—A lower rate of independent mill operations this week suggests that production over the past 90 days was a little too great for the consumption and that some makers have exhausted early delivery orders. The advance in prices recently announced by the American Sheet & Tin Plate Co. and by a number of independent companies is more plainly than previously strictly applicable to second quarter business, because black sheets still are readily obtainable for early delivery at 3.50c., base, Pittsburgh or its equivalent, and 4.75c. and 2.70c., base, Pittsburgh, still can be done on galvanized and blue annealed where the specification accompanies the order. In allowing customers to place orders at the old prices prior to the recent advance, there is no doubt that some second quarter obligations were assumed at the levels \$2 a ton below prices recently announced. There is somewhat freer specifications against contracts for automobile body sheets, but demand from that direction still leaves room for improvement. Independent mill operations are down to below 80 per cent of capacity and counting the American Sheet & Tin Plate at 85 per cent, this branch of the industry is not at 80 per cent, a loss of about 10 per cent from the January rate. Prices are given on page 524.

**Tin Plate.**—Independent companies appear to have anticipated their orders to some extent and the gap between the production rate of those companies and the American Sheet & Tin Plate Co. is closing, through a slightly heavier operation of the latter and not so full production by the former. The general situation is unchanged. Contracts have been placed that will take up all of the probable production for the first half of this year, but up to this time there has been no genuine urgency to specifications, except on the requirements of the Alaska packers, who must have containers a little earlier than other food packers. Prices for this half of the year are established at \$5.50 per base box, Pittsburgh, for standard cokes for domestic account.

**Cold-Finished Steel Bars and Shafting.**—Incoming business about approximates shipments on old orders and few makers are adding much to their obligations. There is no prospect of a pinch in supplies, since there is still much open capacity. The automobile parts makers are not yet buying with any freedom and the lack of the usual amounts of business from that source tells on the general sales total. Prices are holding steadily at recent levels. They are given on page 524.

**Rail and Track Supplies.**—The recent advance of \$2 a ton in wire products by the American Steel & Wire Co. embraces small spikes made by that company at Cleveland, and the new price is \$3.10, base, per 100 lb., Cleveland, with freight equalized with Pittsburgh. Prices of other track supplies based at Pittsburgh are unchanged. There is a fair movement on old contracts, but new business is light. The market on light rails is flat and makers are having trouble getting prices that mean a new dollar for an old one. Prices are given on page 524.

**Hot-Rolled Flats.**—There is still a wide variety of base prices depending on widths and gages. It is probable, however, that as the new card of extras adopted by a number of makers last week becomes generally effective, the market will settle to a common base for hoops, bands and strips. There is no real urgency be-

hind the present demand. Prices are given on page 524.

**Cold-Rolled Strip.**—Business in this product still suffers from the fact that the automotive industry is buying with considerable conservatism, and that demands from other consuming sources are not sufficient to make good the loss of automobile tonnage. Prices are holding at the recent range. They are given on page 524.

**Bolts, Nuts and Rivets.**—There is gradual but steady improvement in bolt and nut orders and prices are holding firmly. On the general run of business recent rivet prices also are maintained, but there are occasional deviations on orders a little out of the ordinary in size. Prices and discounts are given on page 525.

**Coal and Coke.**—The coke market again shows a tendency toward weakness. Production of furnace coke still is too large for consumption, especially as some furnaces are being operated at reduced blasts, and heavy accumulations at the ovens so far have been prevented by the fact that furnace operators have been willing to take more than their contract quotas. These interests, however, now are over supplied and are beginning to cut down on their takings. This is likely to mean the reappearance of unconsigned loaded cars. Current spot demands are so easily met at \$3.75 per net ton at ovens that the market is properly quotable at that price. Unconsigned cars of foundry coke have become rather numerous in the past week and to move them a price as low as \$4.25 has been made.

**Old Material.**—Prices still are seeking lower levels and on the open-hearth grades the decline since a week ago has been 50c. to \$1 a ton, carrying heavy melting grade \$2 to \$2.50 a ton below its recent peak. Dealers recently were inclined to believe that the decline which set in last month would be halted by fresh buying by the mills and that there was a possibility of an upswing prior to the usual spring decline incident to increased offerings common to that season. The expected steel mill buying has not materialized and as a decrease rather than an increase in steel production looms ahead, the idea of an upswing in prices is waning. Heavy melting steel has been sold to consumers at \$20.50, but there are now no bids above \$20, and \$19.50 is as high as the mills that are in the market are offering. There is a possibility that this price may be accepted, because there is not usual competition from Eastern mills for New England scrap and a distinctly lower rate of steel production among Youngstown independents means prices for scrap in that district that permit the material to come right by to Pittsburgh. Dealers claim to be buying heavy steel scrap at \$19.50 for some destinations in the district. This grade, taking into consideration the fact the principal outlet at present is to dealers with short contracts to cover, is quotable at \$19.50 to \$20.50, but the price to consumers is not yet below \$20. Compressed and bundled sheet scrap is lower and on other grades recent prices, except on cast scrap, are not obtainable. The Norfolk & Western Railway is taking bids on 5563 gross tons of scrap.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel .....	\$19.50 to \$20.50
No. 1 cast, cupola size .....	20.50 to 21.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. ....	21.50 to 22.00
Compressed sheet steel .....	18.00 to 18.50
Bundled sheets, sides and ends ..	17.00 to 17.50
Railroad knuckles and couplers ..	22.00 to 23.00
Railroad coil and leaf springs ..	22.00 to 23.00
Low phosphorus blooms and billet ends .....	25.00 to 25.50
Low phosphorus plate and other material .....	24.00 to 24.50
Railroad malleable .....	19.00 to 19.50
Street car axles .....	22.00 to 23.00
Cast iron wheels .....	20.50 to 21.00
Rolled steel wheels .....	22.00 to 23.00
Machine shop turnings .....	16.00 to 16.50
Short shoveling turnings .....	16.00 to 16.50
Sheet bar crops .....	21.00 to 21.50
Heavy steel axle turnings .....	18.50 to 19.00
Short mixed borings and turnings ..	16.00 to 16.50
Heavy breakable cast .....	18.50 to 19.00
Stove plate .....	17.00 to 17.50
Cast iron borings .....	16.00 to 16.50
No. 1 railroad wrought .....	16.50 to 17.00
No. 2 railroad wrought .....	19.50 to 20.50

## Chicago

### Railroad Buying Renewed, but Market Generally Is Quiet

CHICAGO, Feb. 10.—The steel market is quiet so far as fresh buying is concerned. Either users have built up their stocks to a point where they do not need additional supplies at this time or they are waiting to see whether the new prices become firmly established at the advanced levels. The latest \$2 a ton advance to become general was that on wire and wire products, the American Steel & Wire Company having followed the lead of independents in raising quotations.

All of the advances have had the effect of stimulating specifications and for the heavier finished products releases are exceeding shipments. The two leading local producers continue to operate at 100 per cent of ingot capacity and with the blowing in of a third blast furnace at Joliet, all but one of 34 steel works stacks in this district are active.

Railroad buying shows signs of reviving after lagging for several weeks. The Rock Island has closed for 45,000 tons of rails as well as necessary fastenings. The Baltimore & Ohio is in the market for 25,000 tons of rails and 1,000,000 tie plates. Railroad specifications against rail contracts, which had been unusually light, are now being released in volume. Car orders are also more plentiful. The Union Pacific has placed 1000 freight cars and 40 passenger cars; the Minneapolis & St. Louis has bought 1825 freight cars and is about to close for passenger equipment and locomotives; the Soo Line has bought 250 ore cars; and the Delaware, Lackawanna & Western has ordered 1000 box cars.

Construction activity, as measured by fabricating awards and inquiries, has declined. Competition among fabricators is again very keen and in view of the close figuring on current work, there is a strong likelihood that a number of large jobs of long standing such as the Stevens Hotel, Chicago, requiring 17,000 tons, will be placed soon. The automotive industry is still operating at a considerably slower rate than a year ago at this time; in fact, most secondary lines have failed to show a rate of consumption commensurate with the current rate of steel output.

**Ferroalloys.**—Outside of a number of carlot sales of ferromanganese at \$115, New Orleans, the ferroalloys have been inactive.

We quote 80 per cent ferromanganese, \$122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$41.58, delivered.

**Sheets.**—So far as can be learned, all mills are now quoting the advanced prices, although little business as yet has been booked at those quotations. Specifications against first quarter contracts, however, have improved.

Chicago delivered prices from mill are 3.75c. to 3.85c. for No. 28 black, 2.85c. to 2.95c. for No. 10 blue annealed, 4.90c. to 5c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

**Wire Products.**—The American Steel & Wire Co. has followed the lead of independents in advancing wire and wire products \$2 a ton. As was expected, specifications were stimulated by the advance, with the result the mills have improved backlogs. Business from the South and Southwest, notably Kansas and Oklahoma, has been good, but the same cannot be said of Iowa, where a short corn crop has caused stagnation of trade. The Northwest is expected to buy in good volume with the passing of severe weather in that section. The new prices at Chicago district mills are \$3.05 a keg for nails, \$2.80 per 100 lb. for bright plain wire, \$71 a ton for woven wire fence and \$52 a ton for wire rods. Chicago delivered prices are \$1 a ton higher.

**Pig Iron.**—The market is extraordinarily quiet, both inquiries and orders being few and far between. A

Michigan melter is in the market for 1500 tons of malleable, but appears to be in no hurry to close, and a local inquiry for 300 tons of foundry in the higher silicon grades is also still current. A railroad car builder is inquiring for 1000 tons of malleable for a southern Illinois plant and another railroad equipment manufacturer has closed for 1000 tons of iron. Prices of local iron are firm and furnaces are still busy filling their obligations. Opinion is divided as to when another buying movement can be expected. On the one hand, the view is expressed that most melters have built up stocks which will carry them for some time; others believe that the rate of consumption will increase fast enough to force foundries to come into the market for considerable additional tonnage for second quarter. The lowest going price on Southern foundry for all rail shipment appears to be \$20.50, base Birmingham, while some furnaces are asking \$1 more. Sales of Southern iron are almost negligible, however.

Quotations on Northern foundry, high phosphorus malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25 .....	\$24.00
Northern No. 1 foundry, sil. 2.25 to 2.75 .....	25.00
Malleable, not over 2.25 sil. ....	24.00
Basic .....	24.00
High phosphorus .....	24.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago ..	29.04
Southern No. 2 (barge and rail)	25.68
Southern No. 2, sil. 1.75 to 2.25 ..	\$26.51 to 27.01
Low phosph., sil. 1 to 2 per cent, copper free .....	33.29 to 33.79
Silvery, sil. 8 per cent. ....	35.29
Electric ferrosilicon, 14 to 16 per cent .....	47.42

**Plates.**—Local mills continue to receive heavy specifications from railroad car builders, but the volume of business from oil tank fabricators has declined sharply. The Chicago Bridge & Iron Works, however, has booked ten oil storage tanks, requiring 2000 tons, for the Andean Oil Co., Colombia, S. A.

The mill quotation is 2.30c., Chicago. Jobbers quote 3.10c. for plates out of stock.

**Rails and Track Supplies.**—The Rock Island lines have placed 45,000 tons of rails, distributed as follows: 37,845 tons to Illinois Steel Co., 5000 tons to Inland Steel Co., and 2155 tons to Colorado Fuel & Iron Co. The required fastenings were divided among the same mills. Miscellaneous orders for rails received by local mills from small railroads and industries aggregate 12,000 tons. Although the railroads have heretofore shown little interest in rail deliveries, they are now specifying heavily against their contracts, and in view of the heavy demands on other departments of the mills, it is a question whether rail shipments can be handled as expeditiously as desired.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 1.90c. to 2c., f.o.b. makers' mill.

Standard railroad spikes, 3c. mill; track bolts with square nuts, 4c. mill; steel tie plates, 2.45c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.55c. base.

**Bars.**—Local mills rolling soft steel bars are booked for two to three months ahead and are finding it difficult to make deliveries satisfactory to the trade. As yet, however, not much tonnage has been lost to outside mills because of advanced deliveries. A leading Chicago producer is taking new business on the basis of such shipment as it finds it possible to make. This would indicate that some buyers, at least, are looking beyond their nearby requirements. Prices are firm at 2.20c., Chicago.

Mill prices are: Mild steel bars, 2.20c.; common bar iron, 2c. to 2.10c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.70c.

**Structural Material.**—A decline in the volume of structural business is apparent in both fabricating awards and inquiries. The mills, however, will be busy for some time to come discharging the obligations still on their books. While there were few sizable structural lettings during the week, fabricators have accumulated a considerable number of small jobs which bulk fairly



large in the aggregate. Thus the Milwaukee Bridge Co. has booked 1000 tons. A leading award for the week was 900 tons for the Sheridan Road Theater, Chicago, which went to A. Bolter's Sons.

The mill quotation on plain material is 2.30c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

**Cast Iron Pipe.**—Prices now appear to be steady at a minimum of \$42, base, Birmingham. James B. Clow & Sons are low on 800 tons for Akron, Ohio. Kenosha, Wis., has awarded 500 tons to the American Cast Iron Pipe Co. Recommendations indicate that Detroit will divide 4000 tons of 6- to 12-in. between the Lynchburg Foundry Co. and the United States Cast Iron Pipe & Foundry Co. Bartlett, Ill., has awarded the general contract on 230 tons of 6- and 8-in. to the Logan Construction Co., Elgin, Ill. Chicago takes bids today on 100 tons of fittings.

We quote per net ton, f.o.b. Chicago, as follows:  
Water pipe, 4-in., \$54.20; 6-in. and over, \$50.20;  
Class A and gas pipe, \$4 extra.

**Bolts, Nuts and Rivets.**—Bolt and nut specifications are slowly improving, and while manufacturers still have comfortable backlogs, their operations indicate that they could handle considerable more business. One representative bolt and nut plant is operating at 65 per cent rate and others are running at as high as 70 and 80 per cent. The Ford Motor Co. has bought a month's requirements in cold-punched and semi-finished nuts, but the aggregate demand from the automobile industry is appreciably less than it was a year ago at this time. On the other hand, business from farm implement makers is materially better than twelve months ago. The situation in rivets is unchanged. For mill prices see page 525.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to  $\frac{3}{4}$  x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, squared, tapped or blank, \$3.50 off; hot pressed nuts, hexagon, tapped or blank, \$4 off; coach or lag screws, 60 per cent off.

**Warehouse Business.**—The recent advances in mill prices on plates, shapes, bars, sheets and wire products have not been followed by proportionate advances in prices for material out of local warehouse. Warehouse bookings have not been comparable with those of the mills. The volume of business taken by the jobbers in January was about equal to that of January, 1924, but fell considerably short of that of January, 1923. Although the mills are said to be booked three months ahead on the heavier products, warehouses are not yet receiving much business traceable to disappointment in mill deliveries. A suggested explanation is that buyers are replenishing their stocks and are not in pressing need of the material they have bought for current operations. As activity in secondary lines increases, demands on warehouses will no doubt grow heavier.

**Reinforcing Bars.**—The effects of the recent price advance are still to be noted in generous lettings. For the Sears, Roebuck & Co. warehouse in Kansas City 3300 tons of rail steel was awarded the Kansas City Bolt & Nut Co., and 500 tons of spirals are still to be bought. For the Hibbard, Spencer, Bartlett & Co. building, Chicago, figures are being taken on 2700 tons of reinforcing materials, including wire mesh. Reinforcing bars made from billet steel are generally quoted at 2.70c., Chicago warehouse. Lettings include:

Sears, Roebuck & Co. warehouse, Kansas City, Mo., 3300 tons, (rail steel) to the Kansas City Bolt & Nut Co.  
Illinois highway work, 600 tons, to Olney J. Dean & Co.  
Addition to American Furniture Mart, Chicago, 700 tons, to Concrete Engineering Co.  
Hotel at 15 East Ohio Street, Chicago, 250 tons, to Concrete Engineering Co.  
Chicago Produce Market, Chicago, 200 tons of spirals, to American System of Reinforcing.

Pending work includes:

Hibbard, Spencer, Bartlett & Co. warehouse, Chicago, 2700 tons of reinforcing materials, alternate bids on wire mesh and small bars for slabs being taken.

Sears, Roebuck & Co. plant, Kansas City, Mo., 500 tons of spirals.

Three additional public schools, Chicago, 125 tons each, general contract figures being taken.

Municipal Sewer, Grand Rapids, Mich., 150 tons.

Miller & Hart, Inc., seven-story packing plant, Union Stock Yards, Chicago, 100 tons.

School building, Cairo, Ill., 100 tons, general contract awarded to Great Lakes Construction Co., Chicago.

Methodist Episcopal Church, Gary, Ind., 115 tons, to Concrete Steel Co.

**Old Material.**—Although a few grades are quotably lower than a week ago, the general decline which started four weeks ago has come to a halt and the trade at large is already commencing to speculate as to what the next turn of the market will be. Purchases by dealers to fill expiring orders taken at higher prices have tended to steady the market for the time being at any rate. There is little consumer interest in scrap, however, and practically no speculative trading among brokers.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$20.00 to \$20.50
Cast iron car wheels	19.50 to 20.00
Relaying rails, 56 and 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	21.00 to 21.50
Railroad tires, charging box size	22.00 to 22.50
Railroad leaf springs, cut apart	21.50 to 22.00
Rails for rolling	19.00 to 19.50
Steel rails, less than 3 ft.	20.00 to 20.50
Heavy melting steel	17.50 to 18.00
Frogs, switches and guards cut apart	18.00 to 18.50
Shoveling steel	17.25 to 17.75
Drop forge flashings	13.50 to 14.00
Hydraulic compressed sheets	14.50 to 15.00
Axle turnings	15.50 to 16.00
Steel angle bars	18.50 to 19.00
Steel knuckles and couplers	21.00 to 21.50
Coil springs	22.00 to 22.50
Low phos. punchings	19.50 to 20.00
Machine shop turnings	11.50 to 12.00
Cast borings	14.25 to 14.75
Short shoveling turnings	14.25 to 14.75
Railroad malleable	20.00 to 20.50
Agricultural malleable	19.00 to 19.50

Per Net Ton	
Iron angle and splice bars	19.50 to 20.00
Iron arch bars and transoms	20.50 to 21.00
Iron car axles	26.50 to 27.00
Steel car axles	18.50 to 19.00
No. 1 busheling	13.75 to 14.25
No. 2 busheling	10.50 to 11.00
Pipes and flues	12.00 to 12.50
No. 1 railroad wrought	16.00 to 16.50
No. 2 railroad wrought	15.50 to 16.00
No. 1 machinery cast	18.50 to 19.00
No. 1 railroad cast	17.00 to 17.50
No. 1 agricultural cast	17.00 to 17.50
Locomotive tires, smooth	18.00 to 18.50
Stove plate	15.00 to 15.50
Grate bars	14.50 to 15.00
Brake shoes	14.50 to 15.00

## Jones & Laughlin Steel Corporation Operations at Hammond, Ind.

PITTSBURGH, Feb. 10.—A report from Hammond, Ind., that as engineers of the Jones & Laughlin Steel Corporation, Pittsburgh, again were surveying the company's plant site there, it was evident that construction of the steel plant was immediately at hand, brought out denials by officials of the company here that any definite steps in that direction had been taken.

There is much filling to be done at the property, and a supply of filling material being available, the laying of a filling track explains the presence of the engineers.

## Canadian Rail Buying

TORONTO, Feb. 10.—The Canadian railroads have placed some equipment contracts. The Canadian Pacific Railway has ordered from the Algoma Steel Corporation 100-lb. rails with fastenings for 280 miles of new double tracking between Fort William and Winnipeg. The British Empire Steel Corporation, Sydney, N. S., and the Algoma Steel Corporation, have received rail contracts from the Canadian National Railways, but the actual tonnage involved in these orders has not been announced. These orders are expected to be forerunners of larger contracts. The British Empire Steel Corporation is expected to be running at full time about March 1. The Algoma corporation is making repairs and putting its plant in shape to resume capacity operations by March 2, according to a statement by President W. C. Franz.

## New York

### Investigation as to Possible Violation of Anti-Dumping Law—Inquiry for Pig Iron Increases

NEW YORK, Feb. 10.—Competition of foreign pig iron has been so keen recently that domestic producers, particularly in eastern Pennsylvania, have been very much perturbed and in the belief that the anti-dumping law has been violated a number of cables have been sent to foreign countries by the Government to ascertain the facts. The iron about which the greatest suspicion in regard to the violation of the anti-dumping law is entertained is that which comes from India.

After another extremely quiet week in the pig iron market more interest has been shown in the past two days than for probably a month, and new inquiries foot up about 25,000 tons, including one of from 5000 to 10,000 tons for second quarter, concerning which details are not announced, 3500 to 5000 tons for the Thatcher Co., 900 tons for the Standard Gas Equipment Corporation and a number of smaller inquiries, all being for the second quarter except that for the Thatcher Co., which is for third quarter. A large part of the 9000 tons for the Worthington Pump & Machinery Corporation, which has been pending for a number of weeks, has not yet been bought and the same is true of 2000 tons for the New York Air Brake Co. The price situation continues unchanged.

We quote delivered in the New York district as follows, having added to furnace price \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25.....	\$26.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25....	27.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75....	26.52
Buffalo, sil. 1.75 to 2.25.....	27.91
No. 2 Virginia, sil. 1.75 to 2.25.....	30.44

**Ferroalloys.**—Demand for ferromanganese is confined to small and carload lots, which are wanted for prompt shipment in most cases. There is no large business before the market, most consumers being pretty well covered for the first half by the heavy purchases made late in 1924 at considerably below present prices, which are unchanged at \$115, seaboard basis. Demand for spiegeleisen is also light at unchanged prices. Specifications on contracts for 50 per cent ferrosilicon and standard ferrochromium are reported as heavy, with practically no new business being booked.

**Cast Iron Pipe.**—The City of New York is accepting bids until March 16 on a sizable tonnage of pipe, inquiry for which has been expected for some time. Bids open Feb. 13 on 1000 tons of pipe for the City of Mount Vernon, N. Y. Continental cast iron pipe continues a keen competitor of the domestic product. The 200 tons of water pipe, on which the City of Malden, Mass., recently opened bids, is understood to have gone to the Pont-a-Mousson works, the low bidder. The New York & Richmond Gas Co., New York, in the market for a tonnage of gas pipe, is considering prices submitted by importers.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$54.60 to \$55.60; 4-in. and 5-in., \$59.60 to \$60.60; 3-in., \$69.60 to \$70.60, with \$5 additional for Class A and gas pipe. Discounts on both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 40 to 41½ per cent off list; heavy, 50 to 51½ per cent off list.

**Warehouse Business.**—Some improvement is visible but activity is still at low ebb. Notable in the week's business were scattered purchases from outside the Metropolitan area. Severe competition from Philadelphia warehouses is felt as far up as Schenectady and parts of New England. Mills are offering attractive deliveries on tonnages that are not large. Little change is apparent from the recent increase in sheet prices. Galvanized sheets are still obtainable at the old price. There was a slight improvement in boiler tubes and plates. Indications point to probable higher prices for shafting and screw stock for second quarter. Prices are on page 538.

**Finished Iron and Steel.**—Buying has been negligible and indications are that backlogs on the mills have

been reduced somewhat. Some mills are so well booked, however, that they regard the recent advance in quotations as thoroughly justified; others are so positioned that they would be well filled for the first half if only 60 per cent of usual contract tonnages are taken, while there are other mills running at about 60 per cent of capacity able to make deliveries in a few weeks. Small orders of a carload or so seem to command the 2.20c., Pittsburgh, base on shapes and bars, but there are signs that some of the larger mills may be willing to book attractive tonnages in steel bars at 2.10c. Eastern plate mills are now asking 2.10c., but it is not clear that 2c. has disappeared on sizable orders. At the moment pipe is notably quiet, jobbers contending that movement out of stock is subnormal for the season. Though large transactions in rolled steel appear unlikely in the immediate future, one estimate is that there is at least 60,000 tons of concrete reinforcing steel involved in building projects under consideration. A better tone appears in shafting and cold finished steel, one mill stating that it will shortly advance the price from 2.80c. to 2.90c., meanwhile giving regular customers a chance to cover for two or three months at the present price.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.44c. to 2.54c.; plates, 2.34c. to 2.44c.; structural shapes, 2.44c. to 2.54c.

**Coke.**—Holdings of spot coke are further reduced, but the troublous factor is again labor. An operator has announced wage reductions for Feb. 16 and the feeling is that a general reduction impends. Little demand is made on the oversupply of foundry coke, resultant from the refusal of most consumers to absorb the \$1 wage advance, yet their reserves are short and soon they should feel impelled to buy. This grade weakened from 25c. to the full amount of the wage increase in some cases. Current demand, aside from running contracts, is not large. By-product coke is quoted \$10.41, Jersey City.

**Old Material.**—The downward movement of prices on practically all grades continues with brokers making the market in the absence of mill purchasing. Despite the continued decline in quotations, brokers and dealers report no difficulty in obtaining plenty of material and are rapidly filling their old contracts. No. 1 heavy melting steel is not being purchased in any quantities by eastern Pennsylvania consumers, but based on the offering prices of brokers, the current market is not much more than \$17 to \$18, the buying price, delivered to eastern Pennsylvania. Specification pipe is quoted by brokers at \$17 to \$17.50 per ton, delivered. Stove plate is bought by dealers and brokers at \$15 per ton, delivered Phoenixville or Harrisburg, or \$14.50 per ton, delivered to local New Jersey consumers. Borings and turnings are going forward to Bethlehem again, but most brokers have reduced their buying price to \$13 per ton, delivered. A fairly large supply of machine shop turnings still seems available. Although brokers are disposed to contract with consumers for delivery of moderate tonnages at present prices, a sudden upward turn in the market similar to the recent reversal would not be unexpected.

Buying prices per gross ton New York follow:

Heavy melting steel, yard.....	\$13.50 to \$14.00
Heavy melting steel, railroad or equivalent .....	14.00 to 14.50
Rails for rolling.....	15.50 to 16.00
Rails for rolling .....	16.00 to 16.50
Relaying rails, nominal.....	24.00 to 25.00
Steel car axles.....	21.50 to 22.50
Iron car axles.....	27.00 to 28.00
No. 1 railroad wrought.....	16.00 to 16.50
Forge fire .....	12.00 to 12.50
No. 1 yard wrought, long.....	15.00 to 16.00
Cast borings (steel mill).....	11.00 to 11.50
Cast borings (chemical).....	16.50 to 17.00
Machine shop turnings.....	11.75 to 12.25
Mixed borings and turnings.....	10.25 to 10.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	12.75 to 13.25
Stove plate .....	11.50 to 12.50
Locomotive grate bars .....	13.50 to 14.00
Malleable cast (railroad).....	16.00 to 16.50
Cast iron car wheels.....	16.00 to 17.00
No. 1 heavy breakable cast.....	13.25 to 13.75

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$17.00 to \$17.50
No. 1 heavy cast (columns, building materials, etc.), cupola size .....	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.) .....	14.00 to 14.50



## Cincinnati

### Pig Iron Market Extremely Dull—Scrap Buying at a Standstill

CINCINNATI, Feb. 10.—Last week was probably the quietest for many years in the pig iron market in this territory. The only sale of importance was of 500 tons of Northern foundry for shipment during the next three months on the basis of \$22, Iron-ton. Carload sales of Iron-ton district iron were made at \$23, Iron-ton. Southern irons were unusually dull, and even carload sales were infrequent. Prices generally are unchanged. The range in the Iron-ton district is from \$22 to \$23, furnace, and in the South from \$20 to \$22, Birmingham, the latter price being quoted for second quarter delivery. No sales at this price have been reported, however, and as yet it is merely an asking price. There is no activity in basic, Bessemer or silvery irons. Shipments continue good.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Iron-ton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base).....	\$24.05 to \$25.05
Southern fdy., sil. 2.25 to 2.75.....	24.55 to 25.55
Southern Ohio silvery, 8 per cent.....	32.77
Southern Ohio fdy., sil. 1.75 to 2.25.....	24.27 to 25.27
Southern Ohio, basic (nominal).....	24.27
Southern Ohio malleable.....	24.27 to 25.27

**Structural Materials.**—The only inquiries in the market are from two railroads in this district for bridge work, totaling 500 tons. There were no awards of importance.

**Reinforcing Bars.**—Inquiries are fairly numerous for small tonnages. There were no awards of importance. Prices range from 2c. to 2.20c., mill, for hard steel and new billet stock.

**Warehouse Business.**—With the exception of wire products, jobbers report orders disappointing. There was, however, a sizable tonnage of wire products and wire nails moved in the past week. The heavier products are in demand only in a very small way. Improvement is expected, however, as indications point to a resumption of manufacturing activity in this district. Prices are steady, though unchanged.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, \$3.25 per 100 lb.; common wire nails, \$3.25 per keg base; cement coated nails, \$2.65 per keg.

**Finished Materials.**—Inquiries generally are for one and two carloads for fill-in purposes. There was an order for 1100 tons of plates placed in this district, however, at the equivalent of 2.10c., Pittsburgh, during the past week but mills generally on the class of business going are asking the equivalent of 2.20c., Pittsburgh, for bars, shapes and plates. Wire and nail mills are covering customers for the next 60 to 90 days at the equivalent of 2.60c. for plain wire, and \$2.85 per keg for wire nails, Iron-ton basis. Sales have been good. There is a decided improvement in the demand for spikes, track bolts and other track accessories, though most of the inquiries are for one and two carload lots. Prices are steady and an advance by Pittsburgh district manufacturers of these articles is expected. A fair demand is reported for hoops and bands with prices firm. Bolts and nuts are not in demand.

**Sheets.**—Fill-in orders are in fair volume and there also has been some buying for second quarter delivery at the recently established prices. However, business is comparatively light, and it will be several weeks yet before the trade generally comes into the market. Specifications are good and there are some demands being made for anticipation of shipments. Prices in this district are steady at the equivalent of 2.70c., 3.70c. and 4.85c. respectively for blue annealed, black and galvanized sheets, f.o.b. Pittsburgh. Automobile body sheets are in fair demand and the price is steady at 4.75c., Pittsburgh. Tin plate orders are also in satisfactory volume at \$5.50 per base box, Pittsburgh.

**Coke.**—Furnace coke is in fair demand and ship-

ments on contracts are good. There has been no change in prices from any district.

Connellsville furnace, \$3.75; foundry, \$4.50 to \$5.50; New River foundry, \$3.50; Wise County furnace, \$3.75; foundry, \$4.50 to \$5.50; by-product foundry, \$6.50 Connellsville basis.

**Old Material.**—Consumer buying is at a standstill, though dealers are still bidding on materials coming on the market. Prices have apparently reached the low point on this movement, and dealers believe there will be a moderate upturn with a resumption of buying. Railroad offerings are fairly heavy, the Louisville & Nashville, Norfolk & Western, Chesapeake & Ohio and the Southern having lists out this week.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$15.50 to \$16.00
Scrap rails for melting.....	15.00 to 15.50
Short rails.....	19.00 to 19.50
Relaying rails.....	30.50 to 31.00
Rails for rolling.....	17.00 to 17.50
Old car wheels.....	15.50 to 16.00
No. 1 locomotive tires.....	18.00 to 18.50
Railroad malleable.....	17.50 to 18.00
Agricultural malleable.....	16.50 to 17.00
Loose sheet clippings.....	12.00 to 12.50
Champion bundled sheets.....	13.00 to 13.50

Per Net Ton	
Cast iron borings.....	12.00 to 12.50
Machine shop turnings.....	11.00 to 11.50
No. 1 machinery cast.....	19.00 to 19.50
No. 1 railroad cast.....	16.00 to 16.50
Iron axles.....	23.00 to 23.50
No. 1 railroad wrought.....	13.00 to 13.50
Pipes and flues.....	9.00 to 9.50
No. 1 busheling.....	11.50 to 12.00
Mixed busheling.....	9.00 to 9.50
Burnt cast.....	11.50 to 12.00
Stove plate.....	12.00 to 12.50
Brake shoes.....	12.50 to 13.00

The American Rolling Mill Co., Middletown, Ohio, has decided to enter the market as a producer of merchant pig iron. The company operates four blast furnaces, two at Columbus, Ohio, and two at Ashland, Ky., and the product, foundry, malleable and basic irons, will be marketed under the trade name of Buckeye. The company announces that Eaton, Rhodes & Co., with offices at Cincinnati, Pittsburgh and Cleveland, have been appointed sales agents for its pig iron products.

## Boston

### Dutch and Resale Buffalo Hold Center of Pig Iron Stage

BOSTON, Feb. 10.—Competition between Dutch and resale Buffalo iron was keen the past week. Sales of Dutch, silicon 2.50 to 3, were made as low as \$23.11 on dock Boston, duty paid, and resale Buffalo at delivered prices competitive with foreign iron, including one 1000-ton lot of No. 2X second quarter. Indian iron to arrive is well sold up and no English is available just now. Dutch iron is going into storage here. Silicon 2.50 to 3 apparently has settled down to a \$24, Boston dock, duty paid basis, although a western Massachusetts melter is dickering on 2000 tons at about \$26 delivered, or around \$23.50 dock. Buffalo iron, other than resale, is now \$23, furnace base. Alabama second quarter iron is 50c. higher at \$21.50, furnace base, and sales have been made at the new prices. Local sales of all irons the past week were considerably less than for the previous week. A Worcester, Mass., foundry requires 500 tons of malleable for second quarter.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$3.45 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$26.65 to \$27.65
East. Penn., sil. 2.25 to 2.75.....	26.65 to 28.15
Buffalo, sil. 1.75 to 2.25.....	36.91 to 27.91
Buffalo, sil. 2.25 to 2.75.....	36.91 to 28.41
Virginia, sil. 1.75 to 2.25.....	29.92
Virginia, sil. 2.25 to 2.75.....	30.42
Alabama, sil. 1.75 to 2.25.....	30.40 to 31.10
Alabama, sil. 2.25 to 2.75.....	30.10 to 31.10

**Coke.**—The movement of by-product foundry coke from ovens to consumers is not so large as last month. The falling off is attributed in part to the recent advance of 50c. a ton by New England producers, and in part to the fact that large consumers accumulated a surplus of fuel last month. Jobbing foundry coke consumption is increasing slowly, if any. Warmer weather

has brought some relaxation in the heretofore tight crushed coke situation, consequently foundry fuel shipments are not subject to delay. Both the New England Coal & Coke Co. and the Providence Gas Co. quote by-product foundry coke at \$12 a ton delivered in New England.

**Old Material.**—The trade is employed filling old orders, no new mill business having developed. Sentiment is that business will not improve for a month, at least. Prices continue to ease off under their own weight. Contrasted with a week ago, heavy melting steel is 50c. to \$1 a ton lower, scrap rails, shafting, wrought iron, forged flashings, forged scrap and bundled skeleton 50c., and chemical borings 25c. Stove plate for New England delivery has depreciated 50c., while malleable, now that buying for a Connecticut consumer has ceased, is off 50c. to \$1. Textile machinery cast sold the past week to consumers having a fairly high freight rate at \$20.50, \$20.65 and \$21.40 delivered. Practically no market exists for ordinary machinery cast. Cast scrap and heavy melting steel are still available in normal quantities, but supplies of other kinds of material, particularly borings and turnings, are small in New England.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$19.50 to \$20.00
No. 2 machinery cast.....	17.00 to 18.00
Stove plates .....	15.00 to 15.50
Railroad malleable .....	19.00 to 20.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel .....	\$12.50 to \$13.50
No. 1 railroad wrought.....	15.00 to 15.50
No. 1 yard wrought .....	14.00 to 14.50
Wrought pipe (1-in. in diam., over 2 ft. long).....	12.50 to 13.00
Machine shop turnings.....	10.00 to 10.50
Cast iron borings, chemical.....	15.00 to 15.25
Cast iron borings, rolling mill.....	10.50 to 11.00
Blast furnace borings and turnings .....	9.00 to 9.50
Forged scrap .....	11.00 to 11.50
Bundled skeleton .....	11.00 to 11.50
Bundled cotton ties .....	8.50 to 9.00
Forged flashings .....	11.00 to 11.50
Shafting .....	19.00 to 19.50
Street car axles .....	19.00 to 19.50
Rails for rerolling.....	15.00 to 15.50
Scrap rails .....	13.00 to 13.50

## Birmingham

### Second Quarter Pig Iron Orders—Coke Demand Improved

BIRMINGHAM, Feb. 10.—The Southern pig iron market is firm. It is considered strong by some of the furnace companies, though sales are not as active as they have been and the expected buying movement is still in the distance. A few of the small-lot sales are for delivery during the second quarter and inquiries are coming in more frequently for that period. The Sloss-Sheffield Steel & Iron Co. has booked a number of orders already for the second quarter and officials are confident that the increased tonnage, seven blast furnaces being in operation, will be required to meet the needs of the future. This company is asking \$22 for No. 2 foundry, future delivery. The quotations of the district range between \$21 and \$22 per ton, but the lower price is being accepted with caution. Intimation is given that not much iron remains of the probable make of the first quarter in this district though regular customers are able to buy on the open market and are getting spot iron. Many of the smaller industries of this section are buying for only a few weeks ahead.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows, the lower prices being for first quarter and the higher those of the largest producers for second quarter:

No. 2 foundry, 1.75 to 2.25 sil...	\$21.00 to \$22.00
No. 1 foundry, 2.25 to 2.75 sil...	21.50 to 22.50
Basic .....	20.00 to 22.00
Charcoal, warm blast.....	32.00

**Steel.**—A slight advance in steel quotations is announced, but the range heretofore mentioned still prevails. Fabricating plants throughout the territory report contracts coming in. The Southern Steel Works Co. has completed an addition to its plant and is now fabricating 500 tons monthly. This company is furnishing 350 tons of steel for the new plant of Harbison-Walker Refractories Co., this district, and 100 tons

steel for the Lehigh Portland Cement Co.'s enlargement of storage bins, also of this district. Florida building contracts are being placed in this district. The rail mill of Tennessee Coal, Iron & Railroad Co. during January produced 54,219 tons of rails, the record output for the plant, the previous record being 51,652 tons. This mill will continue active operations indefinitely. Other shapes of steel are moving steadily from the district. Steel bars are quoted at 2.25c. to 2.35c., Birmingham.

**Cast Iron Pipe.**—Further new business by the pressure pipe makers in the Birmingham district is reported and the cast iron pipe industry will be active for some time to come. Several specifications are in sight and indications point to the active spring market opening up earlier this year. Quotations are \$40 for 6-in. and over pipe. Soil pipe production continues active with no indications of early abatement. Inquiries reveal the information that no stock is being carried by pressure pipe makers and soil pipe producers have been taking stock from warehouses.

**Coke.**—Demand for coke, as well as quotations and consumption, are all reported improved. Quotations for foundry coke are now given as \$5 to \$5.50 per ton. The Sloss-Sheffield Steel & Iron Co., with increased blast furnace operation, had to have more coke and has started up 200 bee-hive coke ovens and has others in readiness. Two of the larger by-product coke corporations have some surplus coke on hand but not in excess of an average protection. Work on rebuilding 40 of the by-product ovens of the Woodward Iron Co. is now well in hand, the Koppers company having the contract. This company with four blast furnaces in operation is requiring much coke.

**Scrap.**—The old material market shows further improvement though there are no long contracts announced. Dealers say they are selling right along and delivering steadily. No changes are announced in quotations and all prices are firm. Dealers are able to get all the stock necessary and retain large yard forces to prepare scrap according to needs of local consumers.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	15.50 to 16.50
Railroad wrought .....	14.00 to 15.00
Steel axles .....	18.00 to 19.00
Iron axles .....	19.00 to 20.00
Steel rails .....	16.00 to 16.50
No. 1 cast.....	17.00 to 17.50
Tramcar wheels .....	17.00 to 17.50
Car wheels .....	16.00 to 17.00
Stove plate .....	15.00 to 16.00
Machine shop turnings.....	8.00 to 9.00
Cast iron borings.....	8.00 to 9.00
Rails for rolling.....	15.50 to 16.50

## Buffalo

### Weakening in Pig Iron Ascribed to Brokers' Operations—Unsettlement in Scrap

BUFFALO, Feb. 9.—The weakening of the Buffalo market on shipments of iron into New England is ascribed by local producers to the operations of brokers. Emphatic denial is made that local furnaces are offering any standard iron in New England or elsewhere at lower than \$23, base. It is admitted that one Buffalo furnace offered some off-basic iron at lower than \$23, and it is stated that some northern New York foundry has figured in transactions where the price has been shaded. It is also apparent that at least one of three brokerage firms, owning in all 15,000 tons of standard foundry now lying in a Buffalo furnace yard, has offered this iron at \$22, but the four out of five Buffalo furnace operators who are accepting business say that they will not sell under \$23, base. In reference to the off-basic being sold at under \$23, it is stated that this iron is over 1 per cent in manganese, making it useless for malleable furnaces. It is stated unofficially as an evidence of the firmness of Buffalo furnace quotations that the recent New York Airbrake inquiry for 2000 tons of malleable did not bring out a price lower than \$23 from any local producer. Inquiry for the week was about 4000 tons, including one for 1000 tons from New England. It is believed that this



maker bought India iron. The other business offered was in small scattered lots.

We quote prices f.o.b. gross ton, Buffalo, made by furnaces as follows:

No. 2 plain, sil. 1.75 to 2.25.....	\$23.00
No. 2X foundry, sil. 2.25 to 2.75.....	23.50
No. 1 foundry, sil. 2.75 to 3.25.....	24.50
Malleable, sil. up to 2.25.....	23.00
Basic.....	23.00
Lake Superior charcoal.....	29.28

**Finished Iron and Steel.**—While most of the sellers in this territory are selling bars and shapes at 2.465c. delivered Buffalo, one mill has not committed itself entirely to this price and is still accepting some tonnage 2.365c. Buffalo. Wire business continues very good and sellers of pipe say the demand is improving. A good demand exists for black and galvanized sheets at the higher prices. Reinforcing bar inquiry and placement are good with many road contracts coming out. Mill operation is anywhere from 85 to 90 per cent and in the case of sheet and wire mills, 100 per cent.

**Old Material.**—Buying of heavy melting steel by a Buffalo mill at \$19.50 is a feature of this week's market. The market seems to be somewhat unsettled, but it is believed this consumer will be able to satisfy his wants at that price. Steel can be bought as low as \$19 though the strictly No. 1 grade commands \$19.50. Another Buffalo mill has been buying some small lots at \$19 to \$19.50, but it is difficult to pick up large tonnages. Dealers believe the market will remain firm, inasmuch as it will be two more months before the Bethlehem order shipments will have ceased. Cast scrap is weak and there is no market for stove plate. There has been a falling off of demand for low phosphorus and specialty materials.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel.....	\$19.00 to \$20.00
Low phosphorus, 0.04 and under..	22.50 to 23.50
No. 1 railroad wrought.....	16.50 to 17.00
Car wheels.....	20.50 to 21.00
Machine shop turnings.....	14.00 to 15.00
Cast iron borings.....	14.50 to 15.00
No. 1 busheling.....	18.00 to 19.00
Stove plate.....	16.50 to 17.00
Grate bars.....	14.50 to 15.00
Bundled sheets.....	14.00 to 15.00
Hydraulic compressed.....	18.00 to 19.00
Railroad malleable.....	20.50 to 21.00
No. 1 machinery cast.....	18.50 to 19.00
Iron axles.....	30.50 to 31.50
Steel axles.....	20.50 to 21.00

## St. Louis

### Scrap Market Steadier—Pig Iron Quiet but Firm

ST. LOUIS, Feb. 10.—Buying of pig iron for spot shipment is limited to carload lots, with a small total volume. Buying for second quarter shipment has not yet begun to any extent, the only inquiries pending being 500 tons of foundry iron for a St. Louis machinery manufacturer and 300 to 500 tons for a St. Louis engine company. The market continues firm, however, at unchanged prices. Strength is given to the situation by the position of makers, who are well sold up, the St. Louis Coke & Iron Co. being sold up to April. The melt in the district is increasing, and it is expected that consumers will be in the market soon for their second quarter requirements.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Florence and Sheffield (rail and water), \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$26.66
Northern malleable, sil. 1.75 to 2.25.....	26.66
Basic.....	26.66
Southern fdy., sil. 1.75 to 2.25 (rail).....	\$26.67 to 27.17
Southern fdy., sil. 1.75 to 2.25 (rail and water).....	24.78 to 25.28
Granite City iron, sil. 1.75 to 2.25.....	25.81 to 26.31

**Finished Iron and Steel.**—The first rail inquiry of the year has come from the Wabash, being for 5000 tons of 90 lb. A. R. A., Type A, rails, together with the necessary angle bars, spikes and bolts, the mills being asked to state deliveries that can be made. Buying continues along conservative lines as far as warehouses and manufacturers of steel products are con-

cerned. The larger fabricators of structural steel are well supplied with material. Many building projects are spoken of in the newspapers, but are still in the state of being financed.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 2.90c.; No. 28 black sheets, cold rolled, one pass, 4.80c.; galvanized steel sheets, No. 28, 5.80c.; black corrugated sheets, 4.95c.; galvanized, 5.95c.; cold rolled rounds, shafting and screws stock, 2.95c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets,  $\frac{1}{2}$  in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, \$3.50; hexagons, blank or tapped, \$4 off list.

**Coke.**—An increased demand in foundry coke is reported and better business conditions are being noted by consumers in the district. Smelters in the lead belt, who are experiencing unusual prosperity, are heavy buyers of foundry coke from producers in the district. Domestic coke is in fair demand.

**Old Material.**—The market for old materials is steadier than it has been for several weeks. Country dealers consigned more material to this market than it could assimilate, causing prices to decline steadily for the last few weeks. Declines have checked these shipments. Consumers are extremely busy and it is expected that they will be in the market soon. Railroad lists include: Missouri-Kansas-Texas, 1500 tons; Nickel plate, 350 tons; St. Louis & San Francisco, 1000 tons; Chicago & Alton, 1700 tons; Kansas City Southern, 900 tons; Chicago, Milwaukee & St. Paul, 1200 tons; Cotton Belt, 1200 tons; Wabash, 3300 tons, and Chicago, Burlington & Quincy, 15,500 tons, the latter road offering relaying rails.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails.....	\$17.50 to \$18.00
Rails for rolling.....	21.00 to 21.50
Steel rails less than 3 ft.....	21.00 to 21.50
Relaying rails, 60 lb. and under..	25.00 to 26.00
Relaying rails, 70 lb. and over..	32.50 to 33.50
Cast iron car wheels.....	20.00 to 20.50
Heavy melting steel.....	17.00 to 17.50
Heavy shoveling steel.....	17.00 to 17.50
Frogs, switches and guards cut apart.....	19.00 to 19.50
Railroad springs.....	21.50 to 22.00
Heavy axles and tire turnings...	13.00 to 13.50
No. 1 locomotive tires.....	20.00 to 20.50

Per Net Ton	
Steel angle bars.....	17.50 to 18.00
Steel car axles.....	20.50 to 21.00
Iron car axles.....	25.50 to 26.00
Wrought iron bars and transoms	21.00 to 21.50
No. 1 railroad wrought.....	15.50 to 16.00
No. 2 railroad wrought.....	16.00 to 16.50
Cast iron borings.....	12.50 to 13.00
No. 1 busheling.....	15.50 to 16.00
No. 1 railroad cast.....	18.25 to 18.75
No. 1 machinery cast.....	19.00 to 19.50
Railroad malleable.....	16.00 to 16.50
Machine shop turnings.....	9.50 to 10.00
Champion bundled sheets.....	11.00 to 11.50

## San Francisco

### General Business Activity More Moderate—Pig Iron Quiet—Prices Firm

SAN FRANCISCO, Feb. 7 (By Air Mail).—Compared with the activity of a week ago, business during the past week was relatively quiet. The tonnages involved in contracts let during the week were small. There is, however, a fairly large amount of business pending in structural and reinforcing steel, and the building construction that is planned or being prepared will require good sized tonnages.

During January building permits issued in San Francisco and Oakland amounted to \$6,256,593, a gain of \$1,059,014 over the figures for January, 1924. Bank clearings in this city and Oakland during January amounted to \$848,266,088, an increase of \$51,184,029 over the first month of last year. As a shipping port San Francisco is now second only to New York. The value of products in dollars handled through this port during 1924 as tabulated by the Foreign Trade Bureau was \$1,697,788,993, and with other bay cities included the amount is considerably over two billion dollars.

**Pig Iron.**—The lull in buying continues, although a

large Pacific Coast firm recently placed an order for 1275 tons of Southern iron, 3.25 to 3.75 silicon, for delivery in Los Angeles. The first deliveries were made in January and the remainder will be delivered in March. No large sales were made during the past week, and prices are holding firm. A few inquiries for second quarter delivery have been made. Most of them are for small lots of foundry iron.

	Per Ton
*Utah basic .....	\$27.25 to \$28.25
*Utah foundry, sil. 1.75 to 2.25...	27.50 to 28.50
**Scotch foundry .....	29.50 to 30.00
**English foundry .....	28.50 to 30.00
**Belgian foundry .....	26.00 to 28.00
**Indian foundry .....	26.00 to 28.00
**Dutch foundry .....	26.00 to 26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25.....	31.00

\*Delivered in San Francisco.

\*\*Duty paid, f.o.b. cars, San Francisco.

**Ferroalloys.**—Local importers are experiencing difficulty in obtaining supplies of 48 to 50 per cent Swedish ferrosilicon, and the price of \$86 is purely nominal. English ferromanganese, 80 per cent, is firm at \$117.50, duty paid at incoming dock. There is little interest in spiegeleisen, 26 to 27 per cent, at \$47.50.

**Structural Shapes.**—Lettings for the week call for only 745 tons, although a job, an additional 272 tons, has been practically closed. The Southern California Athletic Club building in Los Angeles, 5000 tons, which has been pending for some time, has been indefinitely postponed. Only two fresh inquiries have come up during the week, one in Los Angeles and the other in Santa Monica. Each calls for about 500 tons. Prices are firm at 2.55c. to 2.60c., c.i.f. Small tonnages for immediate delivery out of stock are quoted at 3.15c.

**Plates.**—No awards of any size were made during the week. The city of Vallejo, Cal., will receive bids up to Feb. 18 for 22 miles of 22- or 24-in. pipe line, requiring more than 1000 tons, for the Gordon Valley water project. Current quotations are 2.55c. to 2.60c., c.i.f. Bids for about 6400 tons of plates will be received March 23 by the city of Oakland for the Oakland-Alameda estuary tube. Bids for reinforced concrete are also being requested for the same project.

**Cast Iron Pipe.**—Contracts closed during the week call for 1211 tons of pipe. The current quotations is \$53 to \$54 base, delivered in this district. Awards of the week include the following:

City of Pasadena, 4, 6 and 8 in., Class C cast iron pipe, 225 tons, to National Cast Iron Pipe Co.

City of San Diego, standard Class B cast iron pipe, 600 tons, to National Cast Iron Pipe Co.

City of Napa, 4 and 6 in., Class B cast iron pipe, 120 tons, to National Cast Iron Pipe Co.

City of Santa Cruz, 12 in., Class B cast iron pipe, 266 tons, to U. S. Cast Iron Pipe & Foundry Co.

**Bars.**—Only 805 tons of reinforcing bars are required by awards during the week, although contracts calling for 650 tons additional have been practically closed. Soft steel bars are firm at 2.55c. to 2.60c., base, and soft steel bands are 3.30c. to 3.35c., base. Reinforcing bars are 3.35c., base, carload, and 3.80c., base, l.c.l. Bids are being received from a selected list of contractors for the construction of the new Del Monte Hotel at Del Monte, which will be of reinforced concrete and will be let on a cost plus basis. The estimated cost of the hotel is approximately \$1,250,000. Bids are also being called for the Oakland-Alameda estuary tube, which will require about 4500 tons of reinforcing steel. The principal awards of the week were as follows:

Garage, Bush Street near Kearny, 125 tons, to Edw. L. Soule Co.

Zellerbach Warehouse, San Francisco, 110 tons to Edw. L. Soule Co.

Pacific Telephone & Telegraph Co. building, Sacramento, 425 tons, to Edw. L. Soule Co.

Sacramento Elks Club, 145 tons, to Edw. L. Soule Co.

White Motor Truck Co., Mission and 11th Streets, San Francisco, 400 tons, Gunn, Carle & Co., low bidder.

Eureka School, Eureka, Cal., 250 tons, Gunn, Carle & Co., low bidder.

**Warehouse Business.**—Prices are unchanged, and the present volume of business, although substantial,

is somewhat less than it was a week ago. Warehouses quote:

Merchant bars, \$3.15 base, per 100 lb.; soft steel bands, \$4 base per 100 lb.; angles,  $\frac{3}{8}$  in. and larger x  $1\frac{1}{2}$  in. to  $2\frac{3}{4}$  in., inc., \$3.15 base, per 100 lb.; channels and tees,  $\frac{3}{4}$  in. to  $2\frac{3}{4}$  in., inc., \$3.75 base, per 100 lb.; angles, beams and channels, 3 in. and larger, \$3.15 base, per 100 lb.; tees, 3 in. and larger, \$3.35 base, per 100 lb.; universal mill plates,  $\frac{1}{4}$  in. and heavier, stock lengths, \$3.15 base, per 100 lb.; spring steel,  $\frac{1}{4}$  in. and thicker, \$6.15 base, per 100 lb.; No. 10 blue annealed sheets, \$4.20 base, per 100 lb.; No. 28 black sheets, \$5.25 base, per 100 lb.; No. 28 galvanized sheets, \$6.25 base, per 100 lb.; No. 28 galvanized corrugated sheets, \$6.30 base, per 100 lb.

## Cleveland

### Moderate Improvement in Pig Iron Demand— New Steel Prices Untested

CLEVELAND, Feb. 10.—The recent price advance of \$2 a ton on steel bars, plates and structural material has resulted in a stiffening of the market, but the 2.20c. price has not been established on steel bars and plates except for small lots. The structural market is untested, but mills appear to be holding to 2.20c. for plain material. The price advance has brought out a fair volume of second quarter steel bar contracts at the 2.10c. price and round lot buyers will pay no more at present although car lot sales have been made at 2.20c. Some of the larger bar consumers were covered for the second quarter before the advance and some consumers, particularly bolt and nut and automobile accessory manufacturers, are now negotiating for contracts on the 2.10c. basis. Steel bar consumers want to get under contract as protection against second quarter deliveries. Plates have become firmer at 2.10c. which is now the recognized market price, although one mill is still making a quotation of 2c. on quality plates carrying good extras. Mills are attempting to advance Bessemer free cutting screw stock by adding \$2 a ton extra to the steel bar price for this material, but cold-finishing mills that convert this into screw stock are objecting to paying more than the base bar price. This material formerly carried an extra \$3 above the steel bar price, but this extra disappeared some time ago.

Specifications continue good. Most consumers are taking out all their monthly quotas on first quarter contracts and there is a fair volume of small miscellaneous business. Automobile companies in the Detroit territory are generally restricting their purchases to early requirements and are arranging their schedules so that they will not build cars in excess of the demand. New structural work is light, although an inquiry has come out for 3000 tons for an automobile sales and service station in Cleveland. An Ohio car shop has taken car repair work for the Hocking Valley Railroad requiring 900 tons of plates which have been placed with a Pittsburgh district mill and another lot of 250 tons is pending for car repair work. Boilers for the Farrell works of the Carnegie Steel Co., for which an inquiry is pending, will require 700 tons.

**Pig Iron.**—Inquiry has increased somewhat, leading sellers to believe that a second quarter buying movement may get under way shortly. So far, few consumers have covered for that delivery. Sales during the week were light, although one interest reports orders aggregating 15,000. Much of the new inquiry has come from the East. Inquiries pending from that section aggregate 10,000 tons and include one for 2500 tons for the third quarter. The weakness that has developed in the Valley market has been reflected in Cleveland prices, one producer having made a 50c. reduction in foundry and malleable iron for local delivery. For outside shipment \$23 is the more common price, although this might be shaded for shipment to competitive points. Other Lake furnaces continue to hold to \$23. It is claimed that the \$22 price in the Valley district is be-



ing made only by brokers. One producer is still holding to \$23 and another interest is quoting Valley iron at \$22.50. Shipping orders continue heavy. Michigan automobile companies are ordering iron in somewhat better volume than last month, but are showing caution in making commitments. Business with some of the larger production foundries in Ohio in the automobile field has improved somewhat, but is still rather slow. Northern Ohio jobbing foundries, as a rule, are doing well. The improved outlook in the oil industry has resulted in a more active demand for pig iron from manufacturers of oil supplies.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

Basic, Valley furnace.....	\$22.00 to \$22.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	24.00
Southern fdy., sil. 1.75 to 2.25	26.01 to 27.01
Malleable .....	24.00
Ohio silvery, 8 per cent.....	33.52
Standard low phos., Valley furnace	29.00

**Iron Ore.**—There is as much uncertainty as ever as to what Lake Superior ore prices will be this year, although some advance is generally expected. Consumers are not pressing sellers for prices and it is not expected that the market will be established for several weeks.

**Ore Shipments.**—During January 622,581 tons of Lake Superior ore was shipped from Lake Erie docks as compared with 452,141 tons during January a year ago and with 732,419 tons during December. The balance on dock Feb. 1 was 6,723,719 tons as compared with 7,537,539 tons on the same date a year ago.

**Bolts, Nuts and Rivets.**—Bolt and nut manufacturers are still getting a good volume of specifications on contracts and a fair amount of new business is coming out. Prices are firm. Rivet specifications are lighter than last month and there is not much in new business. Regular prices are holding.

**Wire Products.**—The American Steel & Wire Co., effective Feb. 6, advanced prices \$2 a ton on nails, wire and fence following similar advances by independent mills. A large share of the trade was covered with contracts at the old prices before the advances went into effect.

**Screw Stock.**—Prices are still irregular with the quotations ranging from 2.75c. to 2.85c., Cleveland. The American Steel & Wire Co. is still quoting the latter price, not having made an advance last week evidently because of the irregularity in the market.

**Sheets.**—The recent price advance has not resulted in a stiffening of the market, as there seem to be enough mills that are shading the recent regular prices to absorb all the tonnage that is coming out. Common quotations are 3.50c. for black and 4.60c. for galvanized sheets for early shipment, although at least one mill is naming those prices for the second quarter. Blue annealed sheets are fairly firm at 2.70c. Automobile body sheets are still being offered at 4.60c.

**Strip Steel.**—Some of the Ohio mills are placing the new extras into effect and others will do so shortly. Wide hot-rolled strip steel is unchanged at from 2.25c. to 2.40c. Bands and heavy hoops are quoted at 2.50c. Cold-rolled strip steel is being freely offered at 4c. New demand is not active and some of the mills need orders.

**Reinforcing Bars.**—The advance on carbon steel bars has not resulted in any stiffening on rail steel bars, which range from 1.90c. to 2c. The demand is light.

**Steel Bars and Plates.**—Steel bars range from 2.10c. to 2.20c., Pittsburgh. On plates the range is from 2c. to 2.20c., with 2.10c. the common price.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c.; hoops and bands, 1 in. and wider and 20 gage and heavier, 3.85c.; narrower than 1 in., all gages, 4.35c.; No. 9 annealed wire, \$3.25 per 100 lb.; No. 9 galvanized wire, \$3.70 per 100 lb.; common wire nails, \$3.35 base per 100 lb.

**Warehouse Business.**—Warehouse business shows an improvement. Jobbers have advanced nails and wire

\$2 a ton, following the mill advance. Other prices are unchanged and no advance is looked for until the mill prices become established at the recent advance.

**Semi-Finished Steel.**—Some inquiry is coming out for sheet bars for the second quarter and consumers are trying to buy at \$37.50 per ton. A local producer is holding to \$39 for sheet bars, billets and slabs. In Youngstown the market is represented by \$39 for sheet bars and \$37.50 for large billets and slabs. A \$2 a ton advance on wire rods to \$50, Cleveland, is expected.

**Coke.**—There is a rather moderate demand for foundry coke on which prices are unchanged at \$5 to \$5.75 for standard makes of Connellsville coke.

**Old Material.**—The National Tube Co. came into the market during the week for heavy melting steel scrap for its Lorain works, purchasing 5000 tons from a Cleveland dealer at \$19.50 and it is reported to have bought several thousand tons from another dealer. Dealers are offering \$19 for heavy melting steel to cover against this order. Otherwise there has been no activity and the market is decidedly weak. Prices have declined 50c. a ton on heavy melting steel and several other grades, \$1 a ton on borings and turnings and \$2 a ton on bundled sheet stampings and on compressed sheet steel. Local demand for the latter grade has disappeared, so that an outside market must be found and the best that can be obtained in the Valley district is \$17.50 to \$17.60. Heavy melting steel ranges from \$19 to \$20 in the Valley district. There is a congestion of scrap in that district and two mills have stopped shipments.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel .....	\$19.00 to \$19.25
Rolls for rolling .....	19.00 to 19.25
Rolls under 3 ft. ....	21.00 to 21.50
Low phosphorus melting .....	20.75 to 21.00
Cast iron borings .....	15.25 to 15.50
Machine shop turnings .....	15.25 to 15.50
Mixed borings and short turnings .....	15.25 to 15.50
Compressed sheet steel .....	15.50 to 15.75
Railroad wrought .....	16.00 to 16.25
Railroad malleable .....	21.00 to 21.50
Light bundled sheet stampings .....	13.25 to 13.50
Steel axle turnings .....	17.00 to 17.25
No. 1 cast .....	19.50 to 19.75
No. 1 busheling .....	15.00 to 15.25
Drop forge flashings .....	13.00 to 13.50
Railroad grate bars .....	16.00 to 16.25
Stove plate .....	16.00 to 16.25
Pipes and flues .....	12.75 to 13.00

## Philadelphia

### Finished Steel and Pig Iron Quiet—Scrap Market Still Weak

PHILADELPHIA, Feb. 10.—While prices of finished steel seem to be settling into a fair degree of firmness on the higher basis recently established, buying is developing more of the characteristics that featured the greater part of last year's record. Although most consumers of steel are not particularly well covered for all of the first quarter and have anticipated second quarter requirements only in isolated instances, they are apparently in no haste to contract in view of the prompt deliveries obtainable on most products. Mills continue a high rate of operation, but with the exception of bars are not, in most cases, fully booked for the full first quarter. The railroads, although by no means heavy purchasers, are still providing much of the present business. The Pennsylvania Railroad has recently appeared as a purchaser of satisfactory tonnages of track bolts, spikes, bars and billets and is reported inquiring for a fair tonnage of plates for March-April-May delivery.

Lack of activity in the pig iron market makes it difficult to establish the actual price at which a normal tonnage could be purchased. Transactions seem to be almost entirely confined to carload lots for prompt shipment. In some quarters it is believed that January

registered the peak in the number of furnaces in blast in eastern Pennsylvania and that February will show a decline.

The old material market continues weak with transactions between brokers and producers of scrap almost the only means of determining the current market price.

**Pig Iron.**—Activity has declined to minor sales, consisting largely of carload lots of foundry for prompt shipment. Current sales present a range of \$23.50 to \$24 per ton, furnace, on foundry. No sales of basic are reported, but both buyers and sellers are apparently of the opinion that business could be done today on a basis of \$23 per ton, furnace, on a fair tonnage. Competition from imported foundry iron is noted in the New England district, but sales to eastern Pennsylvania consumers have been confined to small lots. It is noteworthy that in the past few days a sizable shipment of low phosphorus foundry iron is reported to have arrived at the Port of Philadelphia. The Custom House during the week received 3697 tons of pig iron from the United Kingdom and 1268 from India.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$24.26 to \$25.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	25.01 to 25.88
East. Pa. No. 1X	26.01 to 26.88
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.17 to 29.67
Virginia No. 2X, 2.25 to 2.75 sil.	29.67 to 30.17
Basic delivered eastern Pa.	23.75 to 24.25
Gray forge	23.50 to 24.50
Malleable	24.50 to 25.00
Standard low phos. (f.o.b. furnace)	25.50 to 26.50
Copper bearing low phos. (f.o.b. furnace)	25.50 to 26.00

**Billets.**—Absence of transactions provides difficulty in establishing the minimum, but nominally the market is still \$37.50 to \$38 per ton, Pittsburgh, on rerolling billets and \$42.50 to \$43 per ton, Pittsburgh, on forging quality.

**Bars.**—Producers of bars are probably in a more satisfactory position with first quarter tonnage than other mills. Makers are, as a rule, quoting 2.20c. per lb. base, Pittsburgh, for second quarter, but there is a notable absence of second quarter business. The price on current business is still 2.10c. per lb., Pittsburgh.

**Shapes.**—While the same quotations appear on shapes as on bars, 2.20c. per lb., Pittsburgh, for second quarter, and 2.10c. per lb. for current delivery, the strength of the market seems less assured. More building projects involving fair tonnages of structural material are in the market than for several weeks. One of the larger inquiries is for 1300 tons of steel for the Germantown Hospital. Thompson-Starrett Co., New York, contractor on the Gimbel Bros. building, is expected to buy the steel.

**Plates.**—Eastern Pennsylvania mills are now adhering to a 2.10c. per lb., Pittsburgh, basis as the minimum quotation, and although certain producers are quoting 2.20c. per lb. for second quarter, a buyer interested in a tonnage for this delivery could undoubtedly close at the 2.10c. basis. The Pennsylvania Railroad is reported in the market for a tonnage of plates for March-April-May delivery.

**Warehouse Business.**—Orders are still confined to the small lots of a few hundred pounds or a few tons, except for an occasional purchase of a larger tonnage by a buyer unable to wait for mill delivery. Prices are unchanged.

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), 3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ¾ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¾ in. and heavier, 3.10c.; tank steel plates, ¾ in., 3.25c.; blue annealed steel sheets, No. 10 gage, 3.85c.; black sheets, No. 28 gage, 4.85c.; galvanized sheets, No. 28 gage, 6c.; square, twisted and deformed steel bars, 2.85c.; structural shapes, 3.10c.; diamond pattern plates, ¾ in., 5.30c.; ½ in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.15c.; squares and hexagons, cold-rolled steel, 4.65c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 3.95c.; narrower than 1 in., all gages, 4.45c.; steel bands, No. 12 gage to ¾ in., inclusive, 3.95c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 7c.

**Old Material.**—Brokers have reduced buying prices to low levels, but in the absence of consumer purchasing on most grades of scrap, it is difficult to establish prices at which mills could contract. Heavy melting steel is moving almost exclusively on old contracts, the greater portion to the leading consumer in eastern Pennsylvania. A Claymont, Del., consumer is reported to have modified its recent embargo on scrap shipments and is accepting allotted tonnages of heavy melting steel and cast scrap. A Phoenixville consumer of bundled sheets, machine shop turnings and stove plate is still paying \$15 per ton, delivered, on all three grades. Despite the low prices being offered by brokers and reports of considerable tonnages bought by them at higher prices than the market will now bring, there is a strong sentiment of caution in view of the uncertainty of the market.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$18.00 to \$19.00
Scrap rails	18.00 to 19.00
Steel rails for rolling	19.00 to 20.00
No. 1 low phos. heavy 0.04 and under	23.00 to 24.00
Couplers and knuckles	22.00 to 23.00
Roller steel wheels	22.00 to 23.00
Cast-iron car wheels	19.50 to 20.00
No. 1 railroad wrought	20.00 to 21.00
No. 1 yard wrought	18.00 to 19.00
No. 1 forge fire	15.00 to 15.50
Bundled sheets (for steel works)	
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine shop turnings (for steel works use)	15.00
Machine shop turnings (for rolling mill use)	15.00 to 15.50
Heavy axle turnings (or equivalent)	16.50 to 17.00
Cast borings (for steel works and rolling mill)	14.50 to 15.00
Cast borings (for chemical plants)	19.00 to 19.50
No. 1 cast	19.00 to 19.50
Heavy breakable cast (for steel plants)	16.50 to 17.00
Railroad grate bars	15.00 to 16.00
Stove plate (for steel plant use)	15.00 to 15.50
Wrought iron and soft steel pipes and tubes (new specifications)	17.00 to 17.50
Shafting	23.00 to 24.00
Steel axles	23.00 to 24.00

**Imports.**—In the week ended Feb. 7, in addition to the 3697 tons of British pig iron and 1268 tons of Indian iron received at the Port of Philadelphia, there was a total of 14,076 tons of iron ore brought in, 7497 tons from Algiers and 6579 tons from Spain. A total of 4800 tons of chrome ore was received from Portuguese Africa and 350 tons of ferromanganese from the United Kingdom.

### Canadian Scrap Market

TORONTO, ONT., Feb. 10.—While little interest has developed in the iron and steel scrap market during the past week or two, consumers continue to place spot orders for limited tonnages of machinery cast, stove plate and malleable scrap, while mills are ordering heavy melting steel, turnings and flashings in small lots in addition to placing orders against contracts. Generally speaking, however, the present demand for scrap is only about 50 per cent of that of normal times, but dealers in both Toronto and Montreal districts are looking forward to a more active market, as the iron and steel industry tends to show increased production resulting from rail and equipment orders recently placed by the Canadian National and the Canadian Pacific Railways. Some improvement is reported in the export demand for scrap. United States consumers have been inquiring and making purchases in this market, with the result that Canadian dealers are shipping on an average of about 3000 tons per month on this account. Dealers' buying prices are as follows:

	Gross Tons	
	Toronto	Montreal
Steel turnings	\$11.00	\$10.00
Machine shop turnings	11.00	9.00
Wrought pipe	7.00	8.00
No. 1 wrought scrap	13.00	13.00
Heavy melting steel	12.75	12.00
Steel axles	16.00	18.00
Axles, wrought iron	18.00	20.00
Net Tons		
Standard car wheels	16.00	16.00
Malleable scrap	14.00	16.00
Stove plate	14.00	13.00
No. 1 machinery cast	18.00	18.00



# NON-FERROUS METALS

## The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
	Lake	Electro- lytic*	New York	New York	St. Louis	New York	St. Louis
Feb.							
4.....	15.00	14.37½	57.12½	9.50	9.37½	7.70	7.35
5.....	15.00	14.50	57.62½	9.50	9.37½	7.85	7.50
6.....	15.12½	14.62½	57.25	9.60	9.37½	7.95	7.60
7.....	15.12½	14.62½	56.87½	9.60	9.37½	7.95	7.60
9.....	15.12½	14.62½	57.12½	9.55	9.37½	7.90	7.55
10.....	15.12½	14.62½	57.12½	9.55	9.37½	7.90	7.55

\*Refinery quotation; delivered price ¼c. higher.

## New York

NEW YORK, Feb. 10.

The markets are all generally quiet after a spurt of activity in two or three of them. The copper market, after moderate activity and higher levels, is again a little easier. Unusual quietness has pervaded the tin market with prices practically stationary. The lead market is not particularly active and prices are a little lower. The zinc market is stronger and somewhat higher.

**Copper.**—Either because of a better feeling here or because of an upward turn in the London market, electrolytic copper turned strong the middle of last week and advanced by the end of the week to 15c., delivered, with considerable business done with consumers at the various stages of the advance. Some copper was sold as high as 15c., delivered. Thus far this week, however, the market has been quiet and while most large producers are still asking 15c. and refusing to sell below this level, some metal is available at 14.87½c., delivered. Demand is confined to small lots and there is no large business before the market. There is a difference of opinion as to whether present conditions represent another moderate reaction or only a temporary halting in a further advance. It is believed that consumers have considerable metal to buy for the second quarter. The purchases last week are estimated to have been not more than 20,000,000 lb., mostly for April-May delivery. Lake copper is quoted at 15.12½c. to 15.25c., delivered.

**Tin.**—One of the quietest periods in some time characterized the tin market the past week. The volume of sales was light and the trading almost entirely between dealers. The most active day was Wednesday, Feb. 4, when 300 tons changed hands. The market has been entirely without feature, with consumers conspicuous by their absence from the market. Yesterday the market was exceedingly quiet, but today about 200 to 300 tons changed hands, with spot Straits tin quoted at 57.12½c., New York, for spot and up to 57.50c. for futures. In London prices today were £2 to £3 per ton higher than a week ago, with spot standard quoted at £262 10s., future standard at £265 12s. 6d., and spot Straits at £265 15s. The Singapore market yesterday was quoted at £268. Arrivals thus far this month have been 1075 tons, with 7675 tons reported afloat.

**Lead.**—Prices continue to soften and a little business is being done each day. The leading interest continues to maintain its contract price at 9.75c., New York, but prices in the outside market are somewhat lower. Quotations in London the past week have been influential and the market, after receding again, turned stronger so that today lead is quoted at 9.50c. to 9.60c., New York, or 9.35c. to 9.40c., St. Louis.

**Zinc.**—A stronger market in London and a comfortable position in which producers find themselves have been two of the factors resulting in higher prices, with prime Western zinc quoted today at 7.55c., St. Louis, or 7.90c., New York, for early delivery, with futures a few points higher. There has been some easing in the last day or two with more offerings by sellers.

**Nickel.**—Wholesale lots of shot and ingot nickel are quoted at 31c. to 32c. per lb., with electrolytic nickel quoted at 38c.

**Antimony.**—Spot delivery of Chinese metal is bringing as high as 20c., New York, duty paid, because of its scarcity, but future delivery is available at around 17c. to 18c., depending on the position.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c. per lb., delivered.

**Old Metals.**—Prices are lower in sympathy with the new metal market and business is quiet. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible .....	14.25
Copper, heavy and wire .....	13.50
Copper, light and bottoms .....	11.50
Heavy machine composition .....	10.75
Brass, heavy .....	9.00
Brass, light .....	7.75
No. 1 red brass or composition turnings ..	10.00
No. 1 yellow rod brass turnings .....	9.50
Lead, heavy .....	8.50
Lead, tea .....	7.25
Zinc .....	5.00
Cast aluminum .....	19.00
Sheet aluminum .....	18.50

## Chicago

Feb. 10.—The market is one of mixed tendencies, tin and lead having declined, while zinc and antimony have advanced, copper remaining unchanged. Still lower prices in lead are expected, although the metal is showing unusual resistance to decline. Demand for zinc has expanded, although the market cannot be described as brisk. Antimony may go still higher, as very little is due for arrival in this country this month and New York is bare of free stocks of the metal. Old metal prices are unchanged. We quote, in carload lots: Lake copper, 15.12½c.; tin, 58c.; lead, 9.40c.; spelter, 7.70c.; in less than carload lots, antimony, 21c. On old metals we quote copper wire, crucible shapes and copper clips, 12c.; copper bottoms, 10c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 8.25c.; zinc, 4.50c.; pewter, No. 1, 30c.; tin foil, 42c.; block tin, 50c.; all buying prices for less than carload lots.

## Gould Coupler and Storage Battery Companies Are Again Sold

BUFFALO, Feb. 10.—The Gould Coupler Co. and Gould Storage Battery Co., Depew, N. Y., sold in December to Charles J. Graham of Pittsburgh, were sold again last week to the Symington Co., Rochester, manufacturer of railroad specialties. The following statement was issued:

"Charles J. Graham, vice-president Graham Bolt & Nut Co., Pittsburgh, who in December bought the Gould Coupler Co. and the Gould Storage Battery Co. from Commodore Charles A. Gould, has disposed of his holdings to a group of New York bankers who are acting for the Symington interests."

"The new company will be the Gould Coupler Co. of Maryland and William S. Gould, vice-president of the old companies, will be president of the new company. The policies of the old companies will be continued under Mr. Gould's direction, and there will be no material change in the management."

"Giant-Energy" is the title of a moving picture created by the Pennsylvania-Ohio Power & Light Co., operating in the Mahoning and Shenango Valleys, showing the application of electric energy in steel-making, blast furnace and other primary and secondary steel processes. It is being exhibited throughout the country. An allied utility is now bringing to completion at Toronto, in Jefferson County, Ohio, on the Ohio River, the first unit of a new generating station, which will produce at this time 80,000 hp. Power will be transmitted to industrial users in northeastern Ohio and western Pennsylvania over long-range steel tower transmission lines.

In the Shenango Valley in Pennsylvania eight of 12 blast furnaces are in action.

# Prices of Finished Iron and Steel Products (Carload Lots)

## Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....2c. to 2.20c.  
F.o.b. Chicago, base, per lb.....2.30c.

## Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.10c. to 2.20c.  
F.o.b. Chicago, base, per lb.....2.30c.

## Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb....2.10c. to 2.20c.  
Soft steel bars f.o.b. Chicago, base, per lb.....2.20c.  
Reinforcing steel bars f.o.b. P'gh mills, base, per lb....2.20c.  
Rail steel bars, f.o.b. Chicago district mills, base, per lb.2.10c.  
Common iron bars, f.o.b. Chicago, base, per lb.....2c.  
Refined iron bars, f.o.b. P'gh mills, base, per lb..3.00c. to 3.10c.  
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

## Hot-Rolled Flats

(Pittsburgh)

Hoops, base, per lb.....2.50c.  
Bands, base, per lb.....2.40c. to 2.50c.  
Hoops and bands, narrower than 1-in., base, per lb.

2.75c. to 3.75c.  
Strips, 10 in. and wider, base, per lb.....2.25c. to 2.35c.  
Strips, less than 10 in. wide to 3 in.....2.40c. to 2.50c.  
Strips, 3 in. wide and less, base, per lb.....2.50c. to 2.60c.

## Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.80c.  
Screw stock and shafting, f.o.b. Chicago, base, per lb....2.80c.  
Screw stock, base, per lb., Cleveland.....2.75c. to 2.85c.  
Screw stock, base, per lb., Cleveland.....2.85c.  
Shafting, ground, f.o.b. mill, base, per lb.....3.20c.  
Strips, f.o.b. P'gh mills, base, per lb.....4.00c. to 4.15c.  
Strips, f.o.b. Cleveland mills, base, per lb.....4c. to 4.15c.  
Strips, f.o.b. Chicago mills, base, per lb.....4.45c.  
Strips, f.o.b. Worcester mills, base, per lb.....4.30c.

## Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....\$2.85 to \$2.95  
Galvanized nails, 1-in. and longer, base plus....2.25 to 2.35  
Galvanized nails, shorter than 1-in., base plus....2.50 to 2.60  
Bright plain wire, base, No. 9 gage, per 100 lb..2.60 to 2.70  
Annealed fence wire, base, per 100 lb.....2.75 to 2.85  
Galvanized wire, No. 9, base, per 100 lb.....3.20 to 3.30  
Galvanized barbed, base, per 100 lb.....3.55 to 3.65  
Galvanized staples, base, per keg.....3.55 to 3.65  
Painted barbed wire, base, per 100 lb.....3.30 to 3.40  
Polished staples, base, per keg.....3.30 to 3.40  
Cement coated nails, base, per count keg.....2.25 to 2.35  
\*Bale ties, carloads to jobbers...75, 15 and 5 per cent off list  
\*Bale ties, carloads to retailers...75, 10 and 6 per cent off list  
Woven wire fence, base, per net ton to retailers.....\$67.00

Chicago district mill prices are \$2 per ton above the foregoing and Chicago delivered prices are \$3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mills \$3 a ton higher on production of that plant, and Duluth, Minn., mills \$2 a ton higher; Anderson, Ind., \$1 higher.

\*F.o.b. Cleveland.

## Sheets

Blue Annealed  
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh dist. mill.....2.70c. to 2.80c.  
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills..2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.3.50c. to 3.70c.  
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.70c. to 3.80c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.4.75c. to 4.85c.  
No. 28 (base) per lb., f.o.b. Chicago dist. mill...4.85c. to 4.95c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.3.50c. to 3.70c.  
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.70c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.75c.

Long Termes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

## Tine Plate

Standard cokes, per base box f.o.b. Pittsburgh district mills.....\$5.50  
Standard cokes, per base box f.o.b. Chicago district mills 5.60  
Standard cokes, per base box f.o.b. Elwood, Ind.....5.60

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)  
(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb.	20-lb. coating I. C.....\$15.50
base.....\$11.20	25-lb. coating I. C.....17.00
8-lb. coating I. C.....11.50	30-lb. coating I. C.....18.35
15-lb. coating I. C.....14.35	40-lb. coating I. C.....20.35

## Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb..\$2.60  
Large, f.o.b. Chicago, base, per 100 lb.....2.75  
Small, f.o.b. P'gh and Cleveland mills  
70, 10 and 5 per cent off list  
Small (freight allowed within zone limits)  
70 and 10 to 70 off list

## Rails and Track Equipment

(F.o.b. mill)

Rails, standard, per gross ton.....\$43.00  
Rails, light, billet, base, per lb.....1.80c. to 1.90c.  
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.  
Spikes,  $\frac{1}{2}$  in. and larger, base, per 100 lb.....\$2.90 to \$3.20  
Spikes,  $\frac{1}{2}$  in. and smaller, base, per 100 lb.....3.10 to 3.50  
Spikes, boat and barge, base, per 100 lb.....3.25  
Track bolts, all sizes, base, per 100 lb.....3.90 to 4.25  
Tie plates, per 100 lb.....2.35 to 2.50  
Angle bars, base, per 100 lb.....2.75

## Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Inches	Steel	Galv.	Inches	Iron	Galv.
	Black			Black	
$\frac{1}{8}$ to $\frac{1}{4}$ .....	45	19 $\frac{1}{2}$	$\frac{1}{8}$ to $\frac{1}{4}$ .....	+11	+39
$\frac{1}{4}$ to $\frac{3}{8}$ .....	51	25 $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{3}{8}$ .....	22	2
$\frac{3}{8}$ to $\frac{1}{2}$ .....	56	42 $\frac{1}{2}$	$\frac{3}{8}$ to $\frac{1}{2}$ .....	28	11
$\frac{1}{2}$ to $\frac{3}{4}$ .....	60	48 $\frac{1}{2}$	$\frac{1}{2}$ to $\frac{3}{4}$ .....	30	13
1 to 3.....	62	50 $\frac{1}{2}$			

Lap Weld

2.....	55	43 $\frac{1}{2}$	2.....	23	7
2 $\frac{1}{2}$ to 6.....	59	47 $\frac{1}{2}$	2 $\frac{1}{2}$ to 6.....	26	11
7 and 8.....	56	43 $\frac{1}{2}$	3 to 6.....	28	13
9 and 10.....	54	41 $\frac{1}{2}$	7 to 12.....	26	11
11 and 12.....	53	40 $\frac{1}{2}$			

Butt Weld, extra strong, plain ends

$\frac{1}{8}$ to $\frac{1}{4}$ .....	41	24 $\frac{1}{2}$	2 to 3.....	61	50 $\frac{1}{2}$
$\frac{1}{4}$ to $\frac{3}{8}$ .....	47	30 $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{3}{8}$ .....	+11	+54
$\frac{3}{8}$ to $\frac{1}{2}$ .....	53	42 $\frac{1}{2}$	$\frac{3}{8}$ to $\frac{1}{2}$ .....	21	7
$\frac{1}{2}$ to $\frac{3}{4}$ .....	58	47 $\frac{1}{2}$	$\frac{1}{2}$ to $\frac{3}{4}$ .....	28	19
1 to 1 $\frac{1}{2}$ .....	60	49 $\frac{1}{2}$	1 to 1 $\frac{1}{2}$ .....	30	14

Lap Weld, extra strong, plain ends

2.....	53	42 $\frac{1}{2}$	2.....	23	9
2 $\frac{1}{2}$ to 4.....	57	46 $\frac{1}{2}$	2 $\frac{1}{2}$ to 4.....	29	15
4 $\frac{1}{2}$ to 6.....	56	45 $\frac{1}{2}$	4 $\frac{1}{2}$ to 6.....	28	14
7 to 8.....	52	39 $\frac{1}{2}$	7 to 8.....	21	7
9 and 10.....	45	32 $\frac{1}{2}$	9 to 12.....	16	2
11 and 12.....	44	31 $\frac{1}{2}$			

To the large jobbing trade the above discounts are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 $\frac{1}{2}$  points, with supplementary discount of 5 per cent.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2 $\frac{1}{2}$  points less.

## Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel	Charcoal Iron
2 to 2 $\frac{1}{2}$ in.....	27
2 $\frac{1}{2}$ to 3 in.....	37
3 in.....	40
3 $\frac{1}{2}$ to 4 in.....	42 $\frac{1}{2}$
4 to 13 in.....	46
1 $\frac{1}{2}$ in.....	18
1 $\frac{3}{4}$ to 1 $\frac{1}{2}$ in.....	8
2 to 2 $\frac{1}{2}$ in.....	2
2 $\frac{1}{2}$ to 3 in.....	7
3 $\frac{1}{2}$ to 4 $\frac{1}{2}$ in.....	9

Beyond the above discount, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

## Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.....	55-58	3 and 3 $\frac{1}{2}$ in.....	36-39
1 $\frac{1}{4}$ and 1 $\frac{1}{2}$ in.....	47-50	3 $\frac{1}{2}$ and 3 $\frac{3}{4}$ in.....	37-40
1 $\frac{3}{4}$ in.....	31-34	4 in.....	41-44
2 and 2 $\frac{1}{4}$ in.....	22-25	4 $\frac{1}{2}$ in. and 5 in.....	33-37
2 $\frac{1}{2}$ to 2 $\frac{3}{4}$ in.....	32-35		

Hot Rolled

3 and 3 $\frac{1}{2}$ in.....	38-41	4 in.....	43-46
3 $\frac{1}{2}$ in. and 3 $\frac{3}{4}$ in.....	39-42		

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list  
Carbon 0.30 to 0.40 base.....83 to 85 per cent off list  
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

## Seamless Locomotive and Superheater Tubes

Cents per Ft.	Cents per Ft.
2-in. O.D. 12 gage....	15
2-in. O.D. 11 gage....	16
2-in. O.D. 10 gage....	17
2 $\frac{1}{2}$ -in. O.D. 12 gage....	17
2 $\frac{1}{2}$ -in. O.D. 11 gage....	18
2 $\frac{1}{2}$ -in. O.D. 10 gage....	18
2 $\frac{1}{2}$ -in. O.D. 9 gage....	20
3-in. O.D. 7 gage....	35
1 $\frac{1}{2}$ -in. O.D. 9 gage....	15
5 $\frac{1}{2}$ -in. O.D. 9 gage....	55
5 $\frac{1}{2}$ -in. O.D. 9 gage....	57



# Prices of Iron and Steel Products and Raw Materials

## Ores

**Lake Superior Ores, Delivered Lower Lake Ports**

Old range Bessemer, 55 per cent iron.....	\$5.65
Old range non-Bessemer, 51½ per cent iron.....	4.90
Mesabi Bessemer, 55 per cent iron.....	5.40
Mesabi non-Bessemer, 51½ per cent iron.....	4.75

**Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore**

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian.....	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron.....	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal.....	42c.
Manganese ore, ordinary, 48 per cent manganese from the Caucasus.....	40c.
Manganese ore, Brazilian or Indian, nominal.....	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates.....	\$8.75 to \$9.00
Chrome ore, basic, 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, c.i.f., Atlantic seaboard.....	18.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>3</sub> , New York.....	80c.

## Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt.....	\$3.75
Foundry coke, f.o.b. Connellsville prompt.....	\$4.25 to 5.00
Mine run steam coal, f.o.b. W. Pa. mines.....	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines.....	1.75 to 1.90
Mine run gas coal, f.o.b. W. Pa. mines.....	2.25
Steam slack, f.o.b. W. Pa. mines.....	1.25 to 1.30
Gas slack, f.o.b. W. Pa. mines.....	1.30 to 1.40

## Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid.....	115.00
Ferrosilicon, 50 per cent, delivered.....	82.50 to 85.00
Ferrosilicon, 75 per cent.....	145.00 to 147.50
Ferrotungsten, per lb. contained metal.....	90c. to 95c.
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered.....	11.50c.
Ferrovanadium, per lb. contained vanadium.....	\$3.50 to \$4.00
Ferrocobaltitium, 15 to 18 per cent, per net ton.....	200.00

## Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....	\$32.00 to \$34.00
Spiegeleisen, domestic, 16 to 19 per cent.....	32.00 to 33.00
Ferrosilicon, Bessemer, 10 per cent, \$39.50; 11 per cent, \$42; 12 per cent, \$44.50; electric furnace ferrosilicon 10 to 11 per cent, \$38; furnace, with an advance of \$1 per unit for material above 10 per cent.....	
Silvery iron, 5 per cent, \$27.00; 6 per cent, \$28.00; 7 per cent, \$29.00; 8 per cent, \$30.50; 9 per cent, \$32.50; 10 per cent, \$34.50; 11 per cent, \$37.00; 12 per cent, \$39.50.....	

## Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines.....	\$19.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines.....	20.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton.....	18.00

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania.....	\$43.00 to \$46.00	\$40.00 to \$43.00
Maryland.....	48.00 to 50.00	43.00 to 45.00
Ohio.....	43.00 to 46.00	40.00 to 43.00
Kentucky.....	42.00 to 45.00	40.00 to 43.00
Illinois.....	43.00 to 45.00	40.00 to 43.00
Missouri.....	45.00 to 48.00	38.00 to 43.00
Ground fire clay, per ton.....		6.50 to 7.50

Silica Brick:

Pennsylvania.....	40.00
Chicago.....	49.00
Birmingham.....	54.00
Silica clay, per ton.....	8.00 to 9.00

Magnesite Brick:

Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00

Chrome Brick:

Standard size, per net ton.....	48.00
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## Bolts and Nuts

Machine bolts, small rolled threads.....	60 and 10 per cent off list
Machine bolts, all sizes, cut threads.....	50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads.....	50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes.....	50 and 10 per cent off list
Eagle carriage bolts.....	65 and 10 per cent off list
Lag bolts.....	60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads.....	50 and 10 per cent off list
Other style heads.....	20 per cent extra
Machine bolts, c.p.c. and t. nuts, ½ x 4 in. 45, 10 and 5 per cent off list	

Larger and longer sizes..... 45, 10 and 5 per cent off list  
Hot-pressed nuts, blank or tapped, square..... 4c. off list  
Hot-pressed nuts, blank or tapped, hexagons..... 4.10c. off list  
C.p.c. and t. square or hex. nuts, blank or tapped..... 4.10c. off list  
Semi-finished hex. nuts:

½ in. and smaller, U. S. S.....	80, 10 and 5 per cent off list
¾ in. and larger, U. S. S.....	75, 10 and 5 per cent off list
Small sizes, S. A. E.....	80, 10, 10 and 5 per cent off list
S. A. E., ½ in. and larger.....	75, 10, 10 and 5 per cent off list
Stove bolts in packages.....	80 and 5 per cent off list
Stove bolts in bulk.....	80 and 5 and 2½ per cent off list
Tire bolts.....	50, 10 and 5 per cent off list
Bolt ends with hot pressed nuts.....	50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts.....	45, 10 and 5 per cent off list
Washers.....	6c. to 5.50c. off list

The foregoing are delivered prices for 1000 lb. or over, except on stove and tire bolts on which a full freight allowance is made on 300 lb. or over, for shipment within established zone limits, buyers outside of the zone paying the additional freight. Washers and lock washers are quoted f.o.b. Chicago and Pittsburgh.

## Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

Per 100 Net		Per 100 Net	
S. A. E.	U. S. S.	S. A. E.	U. S. S.
¼-in. ....	\$0.44	¾-in. ....	\$2.35
½-in. ....	.515	1-in. ....	3.60
¾-in. ....	.62	1½-in. ....	5.55
1-in. ....	.79	2-in. ....	8.90
1½-in. ....	1.01	2½-in. ....	12.60
2-in. ....	1.38	3-in. ....	18.35
2½-in. ....	1.70	3½-in. ....	21.00

Larger sizes—Prices on application.

## Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....	80, 10 and 10 to 80 and 10 per cent off list
Milled standard set screws, case hardened.....	80, 10 and 10 to 80 and 10 per cent off list
Milled headless set screws, cut thread.....	80, 10 and 10 to 80 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread.....	80, 10, 10 and 10 per cent off list
Upset hex. cap screws, S. A. E. thread.....	80, 10, 10 and 10 per cent off list
Milled studs.....	80, 10, 10 and 10 to 75 per cent off list

## Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, Bessemer, 4-in. and over.....	\$37.00
Rolling billets, open-hearth, 4-in. and over.....	38.00
Forging billets, ordinary carbon.....	42.50 to 45.00
Sheet bars, Bessemer.....	38.00
Sheet bars, open-hearth.....	38.00 to 39.00
Slabs.....	37.00 to 38.00
Wire rods, common soft, base, No. 5 to ¾-in. 48.00 to 50.00	
Wire rods, common soft, coarser than ¾-in. ....	\$2.50 over base
Wire rods, screw stock.....	\$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid.....	15.00 per ton over base
Skelp, grooved, per lb.....	2.10c.
Skelp, sheared, per lb.....	2.10c.
Skelp, universal, per lb.....	2.10c.

\*Chicago mill base is \$50 to \$52. Cleveland mill base, \$48 to \$50.

## Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100* (¼% Nickel, 10 to 20 per cent Carbon)....	\$3.00 to \$3.25
2300 (2½% Nickel).....	4.75
2500 (5% Nickel).....	6.25 to 6.50
3100 (Nickel Chromium).....	3.65
3200 (Nickel Chromium).....	5.50
3300 (Nickel Chromium).....	7.50 to 7.75
3400 (Nickel Chromium).....	6.50 to 6.75
5100 (Chromium Steel).....	3.50
5200* (Chromium Steel).....	7.50 to 8.00
6100 (Chromium Vanadium bars).....	4.25
6100 (Chromium Vanadium spring steel).....	4.25
9250 (Silicon Manganese spring steel).....	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium).....	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium).....	4.50
Chromium Molybdenum bars (0.50—1.10 Chromium, 0.25—0.40 Molybdenum).....	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum).....	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

\*Not S.A.E. specifications, but numbered by manufacturers to conform to S. A. E. system.

## PERSONAL

Peirce Lewis will represent THE IRON AGE as Michigan advertising manager, with headquarters at 7338 Woodward Avenue, Detroit, succeeding A. L. Marsh, who has resigned to join his father in the real estate business in Florida and New York and who goes with the best wishes of THE IRON AGE. Mr. Lewis has been manager of advertising and sales promotion for the Truscon Steel Co., Youngstown, Ohio, for six years and comes to THE IRON AGE with a marketing and sales experience that ought to be unusually helpful to manufacturers, particularly in the territory which he will cover.

Charles F. Brandt has resigned as vice-president and general manager of the Racine Mfg. Co., Racine, Wis., manufacturer of metal automobile bodies and other sheet metal automotive products. Morrill Dunn, vice-president McCord Mfg. Co., Chicago, which owns the controlling interest in the Racine company, has assumed charge of the plant as general manager.

Frank J. Ross, Cleveland, has been appointed manager of the Milwaukee branch of the Federal Foundry Supply Co., to fill the vacancy caused by the death of C. A. Collins.

Frank G. Riehl, general manager Art Metal Construction Co., Jamestown, N. Y., manufacturer of metal desks, office and bank furniture, has resigned, effective April 1. He will continue as vice-president and a director of the company, however, as well as the president of the Jamestown Metal Products.

Irving J. Reuter, general manager of the Remy electric division, General Motors Corporation, Anderson, Ind., has been transferred to the general manager-ship of the Olds Motor works of the company, with headquarters at Lansing, Mich. He will be succeeded at Anderson by C. E. Wilson, who has been assistant manager for a number of years.

J. D. Cox, Jr., president Cleveland Twist Drill Co., has been reelected president of the American Plan Association of Cleveland for the ensuing year. S. D. Wright, general manager Atlas Car & Mfg. Co., was elected vice-president and F. G. Hodell, president Chain Products Co., treasurer. William Frew Long continues as manager of the association.

K. E. Miller has been appointed superintendent of the Donora zinc works of the American Steel & Wire Co., Donora, Pa., succeeding R. G. Johnston, resigned. Mr. Miller has been assistant superintendent of these works.

N. M. Salkover, who conducted the Metallurgical Service Co., Cincinnati, recently combined it with the Queen City Steel Treating Co., and is a member of the organization now operating under the latter name.

Frederick G. Kent, formerly general works manager for the Lodge & Shipley Machine Tool Co., Cincinnati, has been appointed vice-president of the Sowers Mfg. Co., Buffalo.

William M. Stocker, formerly with F. X. Hopper Co. at Glenarm, Md., has accepted a position as mechanical engineer in the engineering department of the Cameron Machine Co. in Brooklyn.

A. J. Johnston, resident manager Hickman, Williams & Co., pig iron and scrap brokers, at Chicago, has been promoted to district manager with headquarters at Chicago. T. L. Wilson has been appointed resident manager at Chicago to succeed Mr. Johnston.

Bruno C. Lechler has acquired an interest in the Eureka Tool & Machine Co., Newark, N. J., specializing in the production of dies, fixtures and machinery, and will be in active charge of the company's affairs.

James A. Bell has resigned as general manager of the Menominee Truck Co., a subsidiary of the Four Wheel Drive Auto Co., Clintonville, Wis., and is succeeded by Joseph F. Kalmes, formerly plant superintendent.

William F. Bidle, president, and William H. Eisen-

man, secretary American Society for Steel Treating, both of Cleveland, were guests of honor at a special dinner given by the Milwaukee Chapter on Feb. 9.

Robert O. Hendrickson, for 10 years chief engineer of the J. I. Case Plow Works Co., Racine, Wis., has accepted a similar position with the Belle City Mfg. Co., Racine, which is extending operations in agricultural and automotive products. F. Lee Norton, formerly vice-president and treasurer of the J. I. Case Threshing Machine Co., Racine, recently became vice-president and general manager of the Belle City company.

Charles C. Boyden, New England representative of Crocker Brothers, is confined at the home of his mother at East Foxboro, Mass., by illness.

P. J. Myall, furnace engineer Tate-Jones & Co., Pittsburgh, will deliver an illustrated lecture on oil burning as applied to foundry practice before the Chicago Foundrymen's Club at the City Club, Chicago, on Saturday evening, Feb. 21.

Walter F. Brumm, formerly sales representative of the Midvale Steel & Ordnance Co., also the Bethlehem Steel Co. at St. Louis, and for the past two years identified with the National Enameling & Stamping Co., joined the sales force of the Inland Steel Co. at Kansas City, Mo., Feb. 1.

George S. Evans for the past five years metallurgist of the Griffin Wheel Co., Chicago, has become identified with the Mathieson Alkali Works, New York, with headquarters in the Strauss Building, Chicago. He will devote particular attention to the sale of a compound for desulphurizing iron.

J. E. Mercure, transformer engineering department, Pittsfield, Mass., works, General Electric Co., has been transferred to Milan, Italy, where he will assist the company's engineers there in transformer work.

Lester A. Lenning has been made chief metallurgist of the New Departure Mfg. Co., Bristol, Conn., to succeed Marcus E. Gerr, who resigned to accept a position in New Haven.

Lloyd G. McCrum has been elected president and general manager, of the Richmond Radiator Co., New York, with plants at Uniontown, Pa., and Norwalk, Conn., new interests having taken control. S. H. Schroth, formerly sales manager, was elected vice-president in charge of sales and W. G. Langford, who was purchasing agent, becomes vice-president in charge of purchases. H. N. Kelly remains as secretary-treasurer.

Harry N. Sawyer, who has been connected with the Washburn & Moen Mfg. Co., Worcester, Mass., and its successor, the American Steel & Wire Co., for over 29 years, has resigned and joined the forces of the Holyoke Co., 621 Broadway, New York, as manager of wire department.

Walter S. Austin, for the past three years mill representative in Los Angeles, Cal., for A. M. Castle & Co., Chicago, has been appointed sales manager of the Los Angeles Iron & Steel Co., distributor of heavy hardware.

Ralph R. Curry has resigned as assistant general superintendent of the Portsmouth works, Wheeling Steel Corporation, to become superintendent of the Allegheny Steel Co., Breckenridge, Pa. Officials of the Portsmouth works gave a banquet in Mr. Curry's honor previous to his departure.

Lawrence Wilcox has been appointed representative in charge of the Columbus, Ohio, district of the Westinghouse Air Brake Co. to succeed S. D. Hutchins, deceased.

C. H. Van Pelt has been appointed sales and advertising manager of the Cincinnati Ball Crank Co., Cincinnati, succeeding V. A. Davison, who has joined the staff of the General Motors Export Co. L. M. Clifford has been appointed Chicago district manager of the Ball Crank Co. to succeed L. A. Marre.

L. C. Bullington, formerly assistant manager of the power department of the Westinghouse Electric & Mfg. Co., at East Pittsburgh, has been appointed



manager of the Cincinnati district office of the company, succeeding J. A. Brett, who died recently.

E. W. Edwards, president Edwards Mfg. Co., Cincinnati, has been decorated by the French Government with the Cross of the Legion of Honor, in recognition of distinguished services to France during the past 10 years.

A. R. Johnson has been elected president and general manager of the Marting Iron & Steel Co., Ironton, Ohio, succeeding Mrs. Nellie M. Lowry, who desired to be relieved of active management. Mr. Johnson, who is general counsel of the company, succeeds Dr. J. W. Lowry on the board of directors.

E. V. Rippingille has been appointed general sales manager of the Dayton Engineering Laboratories Co., to succeed E. J. Graef, appointed assistant to the general manager.

W. Y. Stroh, president, Stroh Steel-Hardening Process Co., Pittsburgh, accompanied by his family, sailed on the Berengaria, Feb. 7, for England and the Continent, to be gone several months.

F. Hugh Morehead, assistant chief engineer, Walworth Mfg. Co., Boston, is scheduled to address the Brooklyn Engineers' Club, 117 Remsen Street, Brooklyn, Thursday evening, Feb. 12, on "An X-Ray Study of the Integrity of Steel Castings." His paper covers the process of manufacture of special steel castings for high pressures.

F. L. Griffith, president Central Steel Co., Massillon, Ohio, has been elected a director of the Ohio Seamless

Tube Co., to fill the vacancy caused by the death of I. H. Denton of Cleveland.

Lyman W. Close has resigned as chief engineer of the Bock Bearing Co., which he has served for seven years, and will engage in sheet metal stamping with David R. Feemster, also resigned from the Bock Bearing Co., where he has been connected for eleven years. The new company will be known as the Lyda Machine Products Co. and will be located in the Toledo Factories Building, Toledo, Ohio.

Le Roy Kramer, vice-president in charge of Western sales of the Symington Co., with headquarters at Chicago, has been appointed vice-president in charge of manufacturing and sales of the General American Tank Car Corporation, Chicago. From 1912 to 1918 he was vice-president in charge of the manufacturing and repair shops of the Pullman Co., Chicago, and from 1918 to 1919 was federal manager of the St. Louis-San Francisco and the Missouri, Kansas & Texas railroads. In 1919 he became vice-president of the Willys-Overland Co., Toledo, and in 1921 became identified with the Symington Co.

E. I. Cornbrooks has been appointed sales manager of the Newport News Shipbuilding & Drydock Co., Newport News, Va., succeeding Benjamin G. Fernald, who has resigned on account of ill health. Mr. Cornbrooks has been connected with the company for nearly twenty years as chief draftsman in the hull department, and later as superintendent of hull construction and superintendent of construction.

## OBITUARY

NORMAN A. CAMPBELL, who died last week at the Engineers' Club in Boston, was associated with the New York Air Brake Co. 25 years, in recent years in an expert capacity. He was a native of St. John, N. B., but spent most of his life in New England. He made his home in Hartford, Conn.

WILLIAM C. MURRAY, general manager Kurtz Brass Bed Co., Corry, Pa., died Feb. 4 in Buffalo General Hospital, Buffalo.

DANIEL W. MCFETRIDGE, since 1906 purchasing agent of the Lehigh Portland Cement Co., Allentown, Pa., died at his home in that city Jan. 31. He began his career in 1881 as weighmaster for the Thomas Iron Co. Four years later he was appointed purchasing agent for the Ironton Railroad and the Thomas Iron Co., resigning in 1904 to become purchasing agent for the Lehigh Valley Transit Corporation. Two years later he became purchasing agent with the Lehigh Portland Cement Co., with which he had since been connected.

HOWARD V. SMALLWOOD, purchasing agent of raw materials, Wheeling Steel Corporation, Wheeling, W. Va., died at his home in Glenwood, W. Va., Feb. 5. He was 44 years old and had been identified with the Wheeling corporation or its subsidiary companies about 20 years. He was first at the La Belle Iron Works, Steubenville, Ohio, and after a brief service with the Youngstown Sheet & Tube Co., Youngstown, Ohio, he went with the Whitaker-Glessner Co., at Portsmouth, Ohio, one of the three component companies of the present Wheeling Steel Corporation. For the past three years he was located in Wheeling. He was active in the affairs of the Purchasing Agents Association of Pittsburgh and was the organizer of a subdivision of the organization composed of steel company purchasing agents who supervise raw materials purchases.

JOHN WHEELDON, Worcester, Mass., president Wheelon Wire Co., West Brookfield, Mass., died suddenly of cerebral hemorrhage, Feb. 6, while inspecting the damage done by a fire in his mill. Mr. Wheelon resigned as general manager of the Wickwire-Spencer Steel Corporation a year ago to establish the Wheelon Wire Co. to manufacture high carbon steel wire. He was born in Manchester, England, moved to Worcester

as a boy, and at 15 entered the employ of the Washburn & Moen Mfg. Co. as office boy. Later he went into the rolling mill, where he advanced rapidly. He was successively superintendent of the Central works, New Haven works, Cuyahoga works, North works and South works of the American Steel & Wire Co. He resigned his place with the company to go with a firm in Lorain, Ohio, but remained only a short time and returned to Worcester in 1918 to become associated with the Spencer Wire Co. When that company joined the Wickwire-Spencer Steel Corporation, Mr. Wheelon was made assistant general manager and afterward general manager. He was 49 years of age.

JOHN A. TRENKAMP, president Ohio Foundry Co., Cleveland, died on Jan. 22.

ANTON WEISKITTEL, president A. Weiskittel & Son Co., Baltimore, maker of stoves, soil pipe and enamel ware, died at his home in that city, Feb. 6, after a brief illness. He was 66 years of age. Two daughters and a son survive.

H. H. PLUMMER, nationally known authority on veneer and door work machinery, and president of H. H. Plummer & Co., San Francisco, manufacturer of woodworking machinery and plant equipment, died Feb. 5 at his residence in Berkeley, Cal. Mr. Plummer was born in Boston 62 years ago and was a graduate of the Boston Institute of Technology.

CHARLES GREER, who was associated with his brother George Greer in the establishment of what now are the Shenango and New Castle tin plate works of the American Sheet & Tin Plate Co., in New Castle, Pa., died at his home in that city Feb. 6. He was born in New Castle 77 years ago and spent his entire life in that locality.

ELMER J. HESS, Cincinnati, manufacturer and banker, died at his home Feb. 5, aged 66. Mr. Hess formerly owned the Hess Spring & Axle Co., Cincinnati, was president of the Hess-Pontiac Spring & Axle Co., Pontiac, Mich.; president of the Western Spring & Axle Co., with factories in several Mid-Western cities, and first vice-president of the Standard Parts Co., which combined with other plants controlled by Mr. Hess.

DANIEL V. REEDY, president and founder of the Reedy Elevator Co., Indianapolis, died Feb. 4, following an attack of heart disease while on a business trip at Lafayette, Ind. Mr. Reedy was born in Cincinnati in 1870 and went to Indianapolis in 1898. Shortly afterward he founded the D. V. Reedy Elevator Co.

## STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	75 1/4	78 3/4	Int. Har. pf. ....	114 1/2	114 1/2
Allis-Chal. pf. ..	106 1/2	107	Jones & L'lin pf. ....	112	112
Am. B. S. & Fdy. 97 1/2	100	100	Lima Loco. ....	68 1/2	71 1/2
Am. B. S. & F. pf. 109	109 3/4	109 3/4	Midvale Steel ..	29	29
Am. Can. ....	163	167	Nat.-Acme .....	6 1/2	7
Am. Can. pf. ....	116	118 3/4	Nat. En. & S. 33 3/8	34 3/4	37 3/4
Am. Car & Fdy. 197 1/2	205 3/4	205 3/4	Nat. En. & S. pf. 86	87 3/4	87 3/4
Am. C. & F. pf. 123	124	124	N. Y. Air Brake 50 1/4	52 1/2	52 1/2
Am. Locomotive. 115	122 7/8	122 7/8	Otis Steel .....	10 3/4	11 3/4
Am. Loco. pf. ....	120 1/2	122	Otis Steel pf. ....	63 1/2	66 3/4
Am. Radiator ..	100	101 1/2	Pressed Stl. Car 64 1/2	66 1/2	66 1/2
Am. Steel Fdries. 46 1/4	48	48	Pressed Steel pf. 89	90	90
Am. Stl. Fd. pf. ....	109 1/2	110 3/4	Replogle Steel ..	19	21 1/4
Bald. Loco. ....	130 3/4	134 3/4	Republic .....	57	60 1/4
Bald. Loco. pf. ....	116 1/4	116 1/2	Republic pf. ....	93 3/4	94 3/4
Beth. Steel ....	50 1/2	51 3/4	Sloss-Sheffield ..	86 3/4	97
Beth. Stl. 7% pf. 101	101 1/2	101 1/2	Sloss-Shef. pf. ....	97 3/4	98 3/4
Beth. Stl. 8% pf. 114 1/2	116 1/4	116 1/4	Superior Steel ..	32	34
Br. Em. Steel ....	3 3/8	3 3/8	Transue-Wms. ..	27 1/4	31
Br. Em. Stl. 2 pf. 10 3/4	10 3/4	10 3/4	Un. Alloy Steel. 30 3/8	32	32
Chic. Pneu. Tool 87	93 1/4	93 1/4	U. S. Pipe .....	177	196
Colo. Fuel .....	44 3/4	47 3/4	U. S. Pipe pf. ....	109	110
Crucible Steel ..	73 3/4	76 1/4	U. S. Steel .....	125 1/2	128 1/4
Crucible Stl. pf. ....	94 1/4	95	U. S. Steel pf. ....	123 1/4	124 1/4
Gen. Electric ...	241 1/2	249 1/2	Vanadium Steel. 27 1/2	30 3/8	30 3/8
Gt. No. Ore Cert. 38 1/2	39 3/4	39 3/4	Va. I. C. & Coke 42	42	42
Gulf States Steel 88 1/2	94 3/4	94 3/4	W'house Air Br. 104 1/2	106	106
Inland Steel ...	48 1/4	50	Y'gstown S. & T. 71 1/2	75 3/4	75 3/4
Int. Harvester. ....	107	108 3/4			

### Industrial Finances

The Transue & Williams Steel Forging Corporation reported net profits in 1924 of \$75,042, this being 75c. each on 100,000 shares of no par stock, compared with \$458,897, or \$4.58 a share in 1923. Current assets were \$2,314,260 and current liabilities \$109,457, representing a slight decrease in working capital. Last year's gross sales were about two-thirds of those of 1923.

Net income of the American Tank Car Co. for 1924 was \$2,046,998 after all charges, making \$5.62 earned on 253,570 shares of no par common stock. This compares with \$1,818,256 in 1923.

In its report for 1924 the Niles-Bement-Pond Co. showed a net loss of \$1,185,808 after charges, against a deficit in 1923 of \$555,387.

The Standard Sanitary Mfg. Co., Pittsburgh, in addition to a cash dividend of \$2.50, has declared a stock dividend of 25 per cent, payable Feb. 15 and also the regular quarterly dividend of 1% per cent, payable Feb. 14.

The Henry A. Poppert & Son Co., which recently moved its brass foundry, machine shop and die casting works from Milwaukee to Fond du Lac, Wis., has filed a voluntary petition in bankruptcy to expedite a reorganization. Schedules show liabilities of \$20,383 and assets of \$47,129. The first meeting of creditors will be held Feb. 6. Assets include fire insurance policies of \$22,000 and merchandise valued at \$10,350. A. D. Sutherland, a director, is acting as attorney.

Lower prices for wire products in the last half of 1924 as compared with the same period of 1923, and the passing of Pittsburgh as a sole basing point on steel prices, cut deeply into the earnings of the Pittsburgh Steel Co. in the six months ended Dec. 31. There was also a smaller volume of business. The company reports a deficit of \$145,356 for the period. Net profit in the same time in 1923 was \$892,771. Sales in the last half of 1924 were \$8,770,020, compared with \$11,489,562 in 1923.

For the first time in several years the Replogle Steel Co. in 1924 operated at a profit. Net earnings, after expenses, were \$1,234,718, which compares with \$76,362 in 1923 and \$35,422 in 1922. In 1924 the company allowed \$642,396 for depreciation, interest and Federal taxes, whereas \$419,510 was assigned for these purposes in 1923 and \$287,208 in 1922. The 1924 net income reached \$592,322, or \$1.18 a share on the 500,000 no par share capitalization. In 1923 a loss of \$415,148 and in 1922 \$251,786 was shown in the income account.

### Industrial Notes

The Columbian Hardware Co., Cleveland, will sell its entire forge business in order to devote the plant exclusively to the manufacture of vises and hardware business. Equipment consists of 30 hammers from 4000 lb. Chambersburg drop to 600 lb. Chambersburg board, together with a large number of trimming presses, Bliss, Toledo and Ferracute; a 4-in. Acme upsetting and forging machine, bulldozer, sand-

blast equipment, billet shear and toolroom, including a battery of Gould & Eberhardt shapers. The plant is in operation and equipment will be sold through Cyril J. Bath & Co., 6900 Machinery Avenue, N. E., Cleveland.

The Acme Steel Goods Co., Chicago, has awarded the contract for building its hot strip mill to the E. W. Bliss Co., Brooklyn.

The H. K. Porter Mfg. Co., 6 Ashland Street, Everett, Mass., maker of bolt clippers, has started building new executive quarters.

The E. L. Essley Machinery Co., Inc., 555 West Washington Boulevard, Chicago, has purchased the southwest corner of Hawthorne and Rees Streets, improved with industrial buildings which it has been occupying under lease.

### Plans of New Companies

The Fitzpatrick Fuller Corporation, New York, has been incorporated with \$25,000 capital stock and 1000 shares of stock, no par value, to manufacture apparatus for stump pulling, etc. It plans to do its own manufacturing, developing operations around a previously established business. W. J. Fitzpatrick and Charles A. Secar, 30 East Forty-Second Street, are the principals.

The North American Tool & Steel Corporation, Prudence Building, Forty-Third Street and Madison Avenue, New York, has been incorporated with \$100,000 capital stock to manufacture tools, steel products and similar lines. J. J. Donovan, M. A. Rogers, and E. A. Walsh are the incorporators.

The Fee & Mason Mfg. Co., 81 Beekman Street, New York, incorporated with \$150,000 capital stock, has acquired the business of a manufacturer of plumbers' and steamfitters' supplies.

The Bandess Corporation, 15 East Twenty-sixth Street, New York, recently organized, plans to manufacture equipment for automobiles. It plans to manufacture cutlery later, negotiations to this end being under way. More complete plans will be announced later. J. J. Southerland is one of the principals.

The Kingsbury Machine Works, Inc., has been organized as a continuation of the business of Albert Kingsbury at Frankford, Philadelphia, manufacturing Kingsbury bearings.

The Union Gas Burner Co., recently incorporated, takes over an established business in the manufacture of gas burners and appliances at 367-69 Ellicott Street, Buffalo. E. M. Rudolph is manager.

The Randolph Oil Burner Co., 1107 Race Street, Cincinnati, has been organized to manufacture oil burning equipment, but is not planning to take up manufacturing yet. Present activities will be confined to distribution. Robert L. Mack is sales manager.

California Road Machinery Co., 465 East Third Street, Los Angeles, Cal., has been organized to deal in road building machinery, having exclusive agency for southern California for the Russell Grader Mfg. Co. The new company is interested in hearing from manufacturers of other lines of road machinery building machinery. Fred W. Holdrick heads the company.

The Motor Bearings & Parts Co., 110 South Davie Street, Greensboro, N. C., has been organized to act as jobber of ball, roller and thrust bearings, brake lining, clutch facings, gaskets, pistons, valves. M. M. Caffey is manager.

The Jones Machine Tool Co., 528 Front Street, Cincinnati, recently incorporated, takes over and will continue the business of a former partnership, dealing in used machine tool equipment. It recently moved into a modern warehouse at 528-32 Front Street, where it has doubled its floor space. It has also equipped shops for rebuilding machines. William F. Jones is president.

The Jordan Radio Co., Inc., care of the Corporation Trust Co. of America, du Pont Building, Wilmington, Del., has been organized with 100,000 shares of stock, no par value, to manufacture radio equipment.

The Worcester Foundry Riddle Co., 166 Union Street, Worcester, Mass., plans to manufacture riddles for foundries and jobbers. It will be in the market for necessary materials.

The Allmetal Weatherstrip Co., 3306 West Sixth Street, Los Angeles, Cal., has been organized to act as distributor of metal weatherstrips. No manufacturing is contemplated at present. R. L. Sergeant is manager.

The J. R. S. Specialties Mfg. Co., Inc., 535 South Ocean Avenue, Patchogue, L. I., has been organized with \$100,000 capital stock to manufacture plumbing, heating and hardware specialties. Manufacturing is under way at a plant in Albany, N. Y. James R. Smith is president.



## TRADE CHANGES

The Swind Machinery Co., Philadelphia, distributor of tools, has opened a Baltimore office at 902 Standard Oil Building, Franklin Street and St. Paul Place, Baltimore.

The E. L. Essley Machinery Co., 551 Washington Boulevard, Chicago, has the sales agency in the Chicago territory for the turret lathes, screw machines and the Foster-Barker wrenchless chucks of the Foster Machine Co., Elkhart, Ind.

The Meriden Foster Merriam Co., Inc., Meriden, Conn., has taken over the assets of Foster Merriam & Co., founded in 1835, and announces a complete reorganization of the old company, management and manufacturing organization of which has been retained in control of both foundry and hardware department. The company is now in a position to render service in the manufacture of light gray iron castings, brass, bronze and aluminum castings, also casters, furniture trimmings and metal specialties.

The Globe-Wernicke Co., office equipment manufacturer, has moved its uptown branch in New York to 56-58 West Forty-Fifth Street.

The Mills & Lupton Supply Co., Chattanooga, Tenn., has moved into new quarters at 1160 Market Street, where there is available about 75,000 sq. ft. of floor space.

The Barnum Machine & Pattern Works, 28 Whitney Avenue, New Haven, Conn., has been organized by James M. Woolson, who managed the business of the foundry following the death in 1919 of S. H. Barnum. The company will specialize in general machine jobbing, power plant work and wood and metal patternmaking. It is the new owner's intention to remove the machine and pattern departments to more spacious quarters as soon as arrangements can be made.

The Premier Equipment Corporation has been organized as successor to the Houston Railway Car Co., Houston, Tex. Its business will consist of locomotive and car repairing and also buying and selling cars, locomotives, rails, industrial equipment, etc. P. R. Plumb is retiring from the Houston company and the new company is composed of: L. A. Wiltshire, formerly of the Birmingham Rail & Locomotive Co., Birmingham; O. D. Cleveland, Equitable Equipment Co., New Orleans, and M. R. Ducey, Houston Railway Car Co.

The Simonds Saw & Steel Co., Fitchburg, Mass., has established a sales and distribution warehouse covering 18 States, including the Atlantic Coast States as far south as Florida, as well as a light manufacturing plant at 1350 Columbia Road, corner of Covington and Eighth Streets, Boston, in a plant recently purchased by the company. The plant is three-story, 60 x 100 ft., and occupies about three and one-half acres of land. Herman D. Horton is manager of the Boston plant.

The Rich Tool Co., 80 East Jackson Boulevard, Chicago, has changed its corporate style to the Carmor Metal Products Co.

The Federal Machinery Sales Co., 12 North Jefferson Street, Chicago, has been appointed exclusive agent in the Chicago district for the Gardner Machine Co., Beloit, Wis., manufacturer of grinding machines and abrasive disks. Harry Hein has been appointed special district representative in charge of disk sales and H. J. Gaumond will continue as direct factory representative.

The Scott Valve Mfg. Co., Detroit, has appointed Russell F. Kleinman, Land Title Building, Philadelphia, sales representative. He will handle the entire line of Scott bronze and iron body valves in Eastern Pennsylvania, Southern New Jersey, Maryland, Delaware and the District of Columbia. The Scott company also appointed the Charles H. Tinker Co., 201 Devonshire Street, Boston, New England representative.

The Stieglitz-Treiber Co., distributor of tin plate, black plate and other tin mill products, which recently established new enlarged offices at 18 East Forty-first Street, New York, plans to carry full stocks of sheet steel in all finishes in its warehouses at Bush Terminal, Brooklyn. J. Marvin Doyle, for 10 years connected with the warehouse firm of Bruce & Cook, and until last July vice-president of Ellenwood & Doyle, of which he was one of the original partners, will be associated in the new department, also in the company's mill business in special production orders.

The Chicago Pneumatic Tool Co. has entered into an agreement whereby it becomes exclusive distributor in the United States of the Pedwyn balancer, used for suspending, lifting and balancing electric and pneumatic portable tools.

The Northwest Engineering Co., 28 East Jackson Boulevard, Chicago, builder of gasoline and electric convertible cranes, shovels and draglines, announces that the district about Minneapolis and St. Paul, Minn., will be handled by the Borchert-Ingersoll, Inc., 2340 University Avenue, St.

Paul, and the territory in and about Davenport, Iowa, by Girke-Robinson, Kahl Building, Davenport.

The Blake & Johnson Co., Waterbury, Conn., manufacturer of cold rolling and finishing machinery for strip metal, has been appointed exclusive sales agent for the Hallden full automatic straightening and cutting off machine heretofore sold directly by the Hallden Machine Co., Waterbury. K. W. Hallden, inventor of the machine, however, will continue his relations with the trade by a working arrangement with the Blake & Johnson Co., and will be available in a consulting capacity. The Hallden automatic has been standardized in 20 sizes.

The Chicago Pneumatic Tool Co. has opened a branch office in Mexico at Apartado 695, San Juan de Letran, 15 Mexico City, D. F.

John S. Pendleton, 52 Vanderbilt Avenue, New York, Eastern representative for the Falcon Steel Co., Falcon Tinplate Co., Franklin Steel Co. and Standard Gauge Steel Co., has been appointed district representative in the East for the Anchor Drawn Steel Co., maker of drill rods and tool steel, with plant at Latrobe, Pa.

F. E. Hughes & Co., Rochester, N. Y., structural steel fabricators, will soon move into their new office building on Lyell Avenue.

The Colonial Steel Co. has established a Philadelphia branch at 522 Drexel Building with John A. Succop as district sales manager. This supersedes the arrangement formerly made with Einwechter & Wyeth.

The A. A. Wire Co., Inc., 110 East Forty-Second Street, New York, has moved its plant to larger quarters at Harrison, N. J., where increased equipment has been provided for handling insulated wires and cables.

The New England Heat Treating Service Co. has changed its name to the Stanley P. Rockwell Co., 112 High Street, Hartford, Conn. It will conduct metallurgical and chemical laboratories as before and will continue as manufacturers' representative.

The Chemical Engineering & Foundry Co., P. O. Box 992, Atlanta, Ga., has changed its name to the Standard Cast Iron Pipe & Foundry Co.

## Earnings of American Steel Foundries

Net income of the American Steel Foundries for 1924 was \$4,787,039 after charges, or \$5.76 each on 722,196 shares of common stock of \$33½ par value. This compared with \$7,595,944 in 1923, or \$9.07 a share on common stock. For the last quarter of 1924 it showed net income of \$1,198,733 against \$1,240,043 in the third quarter and \$1,868,899 in the fourth quarter of 1923. President Lamont said that the company is operating at 75 to 80 per cent of capacity, that December and January were better than previous months and that the outlook for 1925 is encouraging.

The Newton Steel Co. in 1924 did a gross business of \$6,457,562, about \$2,000,000 under 1923. Shipments were 65,168 net tons against 79,151 in 1923. To surplus was added \$157,178, bringing that item to \$1,094,673. President Clark looks for higher prices on full finished steel in the second quarter.

Deere & Co. report net income of \$1,853,338 after all charges, or \$5.61 a share on \$33,000,000 preferred stock. This compares with \$1,789,209 for 1923. Surplus stood at \$818,838 against \$739,209 in 1923. Sales were about 4 per cent less than a year ago. President William E. Butterworth states that operations continue on a conservative basis, but he looks forward to gradual improvement, since crops in the latter part of 1923 were favorable, and points to increasing buying power of the farmer.

Receivers have been appointed for the Atlantic Car & Chemical Works, Ltd., Elizabeth, N. J., upon application of John J. Quigley, White Plains, N. Y., who declared claims of \$15,000. Assets were estimated at \$1,500,000 and liabilities \$700,000. Alfred A. Stern of Elizabeth and Willard N. Lynch, Philadelphia, furnished bonds as receivers.

The Palmetto Tool Co., Jamestown, N. Y., manufacturer of small tools and equipment, has been declared bankrupt, with liabilities of \$5,523 and assets, \$4,592.

The Colona Mfg. Co., Monaca, Pa., manufacturer of patented thread protectors for line pipe, tubing and casing, has placed contracts with the Standard Engineering Co., Ellwood City, Pa., for several new vertical tapping machines for tapping thread protectors. New buildings have been erected to house this equipment and when all improvements have been completed the company's production will be doubled.

# Machinery Markets and News of the Works

## LARGE EXPORT ORDER

### Domestic Buying Light but Inquiries Continue in Good Volume

New York Central to Purchase for West Albany Car Shops—Small Lists Issued by Baltimore & Ohio

WHAT is regarded as the largest export order reported for some time includes 36 lathes, 24 profilers and a number of other items placed by German interests for a gun making plant to be erected in Russia.

On the whole, the volume of purchases has been comparatively light as compared with the preceding weeks of this year. However, the number of inquiries being received makes for optimism as to the more or less immediate future.

## New York

NEW YORK, Feb. 10.

A SLIGHT increase in the volume of inquiries is noted, but on the whole business in machine tools is only of moderate proportions. Much of the single tool inquiry is less for purpose of expansion than for slight improvement in means of production. The manufacturer of radio parts and complete units is evidently providing an increasingly better source of use for small tools. The General Electric Co., as an illustration of this growth, is understood in the past year to have more than quadrupled its employees in the departments making radio parts and units and is in the market for a small list of tools, including drills, bench lathes and other machines for this production.

Although there are fair sized lists of tools in preparation by railroads, current buying from this source is light. The Baltimore & Ohio is in the market with a small list. The Missouri Pacific has closed with an Eastern builder on a  $\frac{3}{4}$ -in. x 18-ft. bending roll and a 100-ton bushing press. The Rock Island Lines have purchased a 100-in. extra heavy boring and turning lathe. There is a continued demand for machine tools of various types for export. Small inquiries from Japan are noted, Russian purchasing continues in fair volume and occasional buying of small machines by European users is reported. The list of the Andes Copper Mining Co., New York, is still pending. Tools in the Adams Street, Brooklyn, plant of the E. W. Bliss Co. are now being offered in the used equipment market. The list includes 12 large planers, 7 engine lathes, 5 radial and 5 upright and multiple drills, 7 grinders, 14 horizontal boring and drilling machines, a shaper and a slotter.

Motors, electric power equipment, conveying and other machinery will be installed in the four-story laundry to be erected by the Colonial Laundry, 16 Lexington Avenue, Brooklyn, to cost about \$200,000. McCarthy & Kelly, 159 Remsen Street, are architects.

George H. Storm & Co., East River and Sixty-ninth Street, New York, lumber, will take bids on general contract in March for a lumber-working, terminal and distributing plant on 137th Street, between Park Avenue and Canal Street, to cost more than \$100,000 with equipment. William H. Gompert, 171 Madison Avenue, is architect.

The Huasteca Petroleum Co., 120 Broadway, New York, has plans for the construction of an oil refinery in the

Demand from the automotive industry continues light, and the long expected railroad lists have not as yet been issued. It is thought that the Santa Fe and Illinois Central will be the first to put out inquiries, followed by the Burlington and the Chicago & North Western.

The New York Central plans to buy \$50,000 to \$75,000 worth of equipment for its West Albany car shops. The Baltimore & Ohio is getting figures on a small list.

The Delco Light Co., Dayton, has issued a small list, and the Lycoming Motors Corporation, Williamsport, Pa., is expected in the market for a few tools.

In some districts the demand for used machinery has been active. More than 50 large machine tools from the Adams Street plant of the E. W. Bliss Co., Brooklyn, N. Y., have been placed on the market.

oil fields district, Mexico, to cost more than \$500,000 with machinery, the majority of which will be purchased in the United States.

The New York Board of Transportation, John J. Delaney, chairman, 49 Lafayette Street, New York, will take bids on a general contract for a series of one and two-story repair shops at Coney Island, for which an appropriation of \$10,000,000 is available, including equipment.

The Board of Trustees, North Tarrytown, N. Y., will take bids until Feb. 20 for equipment for a water supply system, including pumping machinery and accessories, valves, hydrants, etc., and one 750,000-gal. capacity steel water tank. The Wulff Engineering Co., National Bank Building, Tarrytown, N. Y., is engineer. Thomas A. Quinn is village clerk.

Philip Steigman, 198 Montague Street, Brooklyn, architect, has completed plans for a five-story automobile service, repair and garage building, 49 x 200 ft., to cost approximately \$250,000 with equipment.

The installation of manual training equipment is planned in the new four-story high school to be erected at Grand and Chapin Avenues, Jamaica, N. Y., by the Board of Education of the City of New York, 400 Park Avenue, estimated to cost \$1,950,000, for which bids are being asked on a general contract until Feb. 19. William H. Gompert, Flatbush Avenue Extension and Concord Street, Brooklyn, is architect.

The New York Machinery Co., 200 Fifth Avenue, New York, has inquiries out for a number of 42-in. die presses.

Charles Goodman, 375 Fulton Street, Brooklyn, architect, has plans for a two-story automobile service, repair and garage building, 95 x 100 ft., to cost about \$70,000, for which bids will soon be asked on a general contract.

The American Chamber of Commerce in London, Kingsway, London, W. C. 2, England, has received an inquiry from an association in Egypt desiring information regarding American agricultural machinery and hardware.

The Board of Water Supply, Mount Vernon, N. Y., is asking bids until Feb. 20 for equipment for extensions in the local water supply system, including gate valves, air valves, 990 tons cast iron pipe, 24 and 30 in. diameter, 18 tons special castings, etc. Nicholas S. Hill, Jr., 112 East Nineteenth Street, New York, is consulting engineer.

The Board of Education, High School Building, North Avenue, New Rochelle, N. Y., is planning the installation of manual training equipment in its proposed two-story junior high school, estimated to cost \$800,000, for which bids are being asked on a general contract until Feb. 24. Starrett & Van Vleck, 8 West Fortieth Street, New York, are architects.

Morris B. Adler, 236 West Fifty-fifth Street, New York, architect, has plans for a four-story automobile service, garage and repair building at 57 Great Jones Street to cost about \$80,000, for which bids will be asked on general contract before the close of the month.



### The Crane Market

NEW inquiries for electric overhead equipment are generally confined to requests for single cranes and companies with business pending are evidently in no haste to close. Locomotive crane inquiry is increasing slightly, but the railroads are still inactive. A fair degree of interest in used locomotive cranes is noted. The Public Service Production Co., Newark, N. J., which closed this week on three hand power cranes for the Bath-Portland Cement Co., is expected to award a 20-ton and a 6-ton hand power crane for its own use in a few days. The inquiries of Stone & Webster, Boston, for a 110-ton crane, the Phoenix Utility Co., New York, for a 120-ton crane and gate hoists and the New York Edison Co., New York, for two 200-ton cranes have not yet closed.

The Pressed Steel Car Co., P. O. Box 53, Pittsburgh, is inquiring for a second-hand overhead traveling crane with 82-ft. span.

In the Pittsburgh district the steel mills seem more inclined to go ahead with projected improvements than other lines of industry and the outlook is for good business in the type of cranes generally purchased for steel plant use. Prices noted on recent sales indicate keen competition among builders.

Among recent purchases are:

Public Service Production Co., Newark, N. J., two 20-ton and one 5-ton hand power crane for the Bath-Portland Cement Co., Sands Eddy, Pa., from the Whiting Corporation.

Morristown County Crushed Stone Co., Morristown, N. J., three 25-ton locomotive cranes from the Browning Co.

M. Isacovitz, scrap iron and steel, Reading, Pa., a 15-ton used Browning locomotive crane from the Hoisting Machinery Co.

Andes Copper Mining Co., New York, a 25-ton locomotive crane for export to Chile from the Industrial Works.

Midland Sugar Co., New York, two 20-ton used Browning locomotive cranes from the Hoisting Machinery Co.

Brewer Dry Dock Co., Port Richmond, Staten Island, New York, 15-ton, used Brownhoist locomotive crane from the Hoisting Machinery Co.

Hudson Shipbuilding Co., Newburgh, N. Y., a 17-ton used Industrial locomotive crane, from Philip T. King.

Central Furnace Co., Massillon, Ohio, a 10-ton ore bridge, 360-ft. span, 480-ft. overall length, from the Alliance Machine Co.

Gary Tube Co., Gary, Ind., two 3-ton slab chargers, 63-ft. span, from the Alliance Machine Co.

International Harvester Co., Chicago, one 150-ton, 40-ft. span rope stripper and a 5-ton, 71-ft. span, soaking pit crane from the Alliance Machine Co.

LaCade Steel Co., St. Louis, a 100-ton, 55-ft. span ladle crane from the Alliance Machine Co.

Central Tube Co., Economy, Pa., a 10-ton trolley and a 5-ton, 23-ft. 6-in. span standard overhead crane, from the Alliance Machine Co.

Michigan Alkali Co., Wyandotte, Mich., two 6-ton bucket trolleys from the Alliance Machine Co.

American Sheet & Tin Plate Co., Gary, Ind., a 10-ton, 90-ft. span crane from Manning, Maxwell & Moore, Inc., Shaw Electric Crane works.

Standard Tin Plate Co., Cannonsburg, Pa., a 15-ton, 107-ft. span and a 5-ton, 25-ft. span overhead crane from Manning, Maxwell & Moore, Inc., Shaw Electric Crane works.

John F. Casey Co., Aspinwall, Pa., a 5-ton, 45-ft. span overhead crane from the Northern Engineering Works.

William Swindell & Bros. Co., Aspinwall, Pa., a 5-ton crane, slightly special, from Manning, Maxwell & Moore, Inc., Shaw Electric Crane works.

The General Ceramics Co., 50 Church Street, New York, will build an addition to its No. 2 plant at Metuchen, N. J., for the manufacture of sanitary ware estimated to cost \$250,000 with machinery. A Shaw gas-fired kiln will be installed.

The Monroe Calculating Machine Co., 555 Mitchell Street, Orange, N. J., has acquired the local factory of the Orange Hat Box Corporation. The new owner will remodel and install machinery for an additional unit.

The foundry and plant of the William H. Atkinson Co., 201 Harrison Street, Hoboken, N. J., will be offered for sale on the premises by the receivers, James J. Murphy and William H. Atkinson, Feb. 18.

The Western Electric Co., 195 Broadway, New York, has awarded a general contract to the Turner Construction Co., 244 Madison Avenue, for the erection of 11 buildings, from one to six stories, at its new plant at Kearny, N. J. W. R. Katelle, 110 William Street, New York, is engineer.

The Borough Council, Sea Girt, N. J., is asking bids until Feb. 24 for one steel water tank of 150,000 gal. capacity, with steel tower and all appurtenances, for the borough pumping station. G. Roland Moore, Asbury Park Trust Building, Asbury Park, N. J., is engineer.

The A. H. G. Sign Corporation, 314 Bergenline Avenue, West Hoboken, N. J., recently formed, will place contracts for castings, screw machine work, cabinets, etc. Edward J. Zengel is secretary.

The United Color & Pigment Co., Evergreen Avenue and McClelland Street, Newark, will proceed with the erection of an addition to cost about \$40,000 with equipment.

The Servidish Co., 165 Broadway, New York, manufacturer of fiber specialties, has awarded a general contract to Fred S. Smith, 10 Washington Street, Morristown, N. J., for its proposed plant at Morristown, three stories, 60 x 160 ft., estimated to cost \$50,000. L. W. Luellen is president.

The Auto Comfort Accessories Co., Oak Hill, W. Va., maker of automotive equipment, is ready to place contracts for making a steel radiator protector. It is in the market for dies. A. A. Vines is manager.

The Aluminum Co. of America, it is announced, has obtained control of the plant of the American Magnesium Co., Niagara Falls, N. Y., and will convert it into a factory manufacturing aluminum automobile bodies. S. K. Colby, manager of the American Body Co., Buffalo, will be in charge of operations at Niagara Falls.

### Philadelphia

PHILADELPHIA, Feb. 9.

BIDS have been asked by the Philadelphia & Reading Railroad Co., Philadelphia, for the construction of an engine house with repair facilities at Lebanon, Pa. It has also filed plans for a new storage and distributing elevator at Shamokin and Twentieth Streets, Philadelphia, to cost about \$175,000 with equipment.

The Columbia Steel Equipment Co., 341 Chestnut Street, Philadelphia, manufacturer of safes, etc., is contemplating further expansion, to consist of a two-story and basement plant to cost approximately \$32,000. It is expected to begin work during the summer. J. Frank Clark, 23 South Sixteenth Street, architect, will probably prepare plans. George Bergmann is president.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Feb. 17, for 500 steel boiler tubes for the Philadelphia Navy Yard, schedule 2390, and 205 water headers for the same yard, schedule 3287.

The Franklin Lamp Mfg. Co., Philadelphia, has leased space in the building at 400-8 North Twelfth Street, for a local plant.

Samuel Willig, Room 1113 Franklin Trust Co. Building, Fifteenth and Chestnut Streets, Philadelphia, has tentative plans for a two-story automobile service, repair and garage building, 87 x 120 ft., to cost approximately \$100,000 with equipment.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received the following inquiries: (43186) from Hernandez Brothers, Chihuahua, Mex., desirous of getting in touch with American manufacturers of wire nail machinery for a proposed plant; (43172) from H. W. Wood & Co., (S. A.) Ltd., 13 Burg Street, Cape Town, South Africa, interested in getting in contact with American manufacturers of cast iron pipe and fittings; (43183) from F. L. Brooks & Co., Ltd., 121-A, Bunhill Row, Chiswell Street, London, E. C. 1, England, desirous of getting in contact with American manufacturers of small tools, hardware, corrugated joint fasteners, padlocks, etc.; (43196) from Gebr. Gruttner Deutsche Handelsgesellschaft Sturmvoegel, Berlin-Halensee, Germany, wishing to get in touch with American manufacturers of special machinery for wood and metal products, electrical specialties, etc.; (43175) from Wolf & Janson, Tordenskjoldagt, 1, Oslo (Christiania), Norway, desiring to get in touch with American manufacturers of machinery for making machine screws; and (43191) from Ungarische Erdgas A. G., Medgyes, Hungary, desirous of getting in touch with an American manufacturer of ditching machinery for laying high pressure natural gas pipe lines in hilly countries.

Madiera, Hill & Co., Broad and Spruce Streets, Philadelphia, have plans for a new steel breaker at their coal mining properties at Natalie, near Mount Carmel, Pa., to cost \$80,000 with machinery.

The Certain-teed Products Corporation, Trenton, is planning to rebuild the portion of its plant destroyed by fire Feb. 4, covering primarily the oxidizing department. An official estimate of loss has not been announced. Headquarters are at 100 East Forty-second Street, New York.

The Federated Metals Corporation, Trenton, N. J., operated by the Trenton Smelting & Refining Co., Canal and Pearl Streets, has acquired property 350 x 600 ft., and plans the erection of new works for zinc and other metal production, with initial building, 100 x 200 ft. W. S. Monroe is manager of the operating company.

The Board of Education, Allentown, Pa., has authorized the erection of a one-story vocational shop adjoining the high school for machine and automobile repair work. Nelton Butz is superintendent of vocational education.

Lester Davis, 616 Spruce Street, Scranton, Pa., architect, will take bids in March for a four-story automobile service, repair and garage building, 120 x 160 ft., to cost \$350,000 with equipment.

The Boyertown Burial Casket Co., Boyertown, Pa., has acquired a building at Columbus, Ohio, for the establishment of a new branch plant. It recently opened a branch factory at Harrisburg, Pa.

The Board of Education, Midland, Pa., plans the installation of manual training equipment in its proposed two-story and basement senior and junior high school estimated to cost \$300,000, for which plans are being prepared by W. G. Eckles, Lawrence Savings & Trust Building, New Castle, Pa., architect.

The W. W. Truxell Foundry Co., Jeannette, Pa., is planning to rebuild the portion of its foundry destroyed by fire Feb. 4, with loss estimated at \$15,000.

The Lee Tire & Rubber Co., Conshohocken, Pa., is contemplating extensions in its local plant, as well as at its branch plant at Youngstown, Ohio, to include the installation of rubber mill equipment, vulcanizing and conveying machinery, electric power units, etc., estimated to cost \$150,000.

The McCarter Iron Works, Norristown, Pa., will buy one 2- or 3-post hydraulic scarfing machine under 1500 lb. to handle up to 1/4-in. plates.

A. J. O'Neill, 1524 Chestnut Street, Philadelphia, is in the market for a saddle tank locomotive, narrow and standard gage; also switches not over ten years old.

The Metal Castings Co., Phoenixville, Pa., recently organized, will manufacture non-ferrous castings for its own use and for commercial trade. Later it will operate a gray iron foundry. Buildings are completed and the company is in the market for additional equipment. It will have capacity of about 25 tons per month in brass, bronze and aluminum castings up to 250 lb. Subscribed capital is \$125,000. C. S. Wilmot is one of the heads.

A lathe, drill press, grinder, cylinder re boring machine and other machinery will be required by Derrick Brothers, Clearfield, Pa., in connection with proposed garage and service station to replace one recently destroyed by fire with a loss of \$60,000.

## St. Louis

ST. LOUIS, Feb. 10.

**P**ROPERTY at Sixteenth Street and Oakland Avenue, Kansas City, Mo., adjoining its present plant has been acquired by the National Lead Battery Co., Sixteenth Street, to double the capacity of the works. Plans are in progress for a new building. G. L. Pew is general manager.

The Helena Sheet Metal Co., Helena, Ark., has purchased a building adjoining its plant and will remodel for an addition. Equipment will be installed to double, approximately, the present output.

Harry Faulkner, 3420 Benton Boulevard, Kansas City, Mo., and associates have secured a gas franchise at Jonesboro, Ark., and are said to have plans under way for the installation of an artificial gas plant to cost close to \$300,000, with power house, generating machinery, etc.

R. A. Harrison, Frederick, Okla., and associates will take bids in March for the construction of a one-story cotton compressing plant estimated to cost \$150,000 with machinery.

The Childress Lead & Zinc Co., Joplin, Mo., is planning to rebuild the portion of its Fort Worth mine and plant, Picher, Okla., recently destroyed by fire with loss estimated at \$100,000 including equipment.

The Tulsa Auto Spring Co., 822 East First Street, Tulsa, Okla., recently organized, has acquired the local plant and business of the Corbin Spring Works. Tentative plans are

under consideration for improvements and extensions. L. C. Brock is president.

The Ornamental Wire Co., 2631 University Avenue, St. Louis, plans the erection of a one-story addition, 70 x 86 ft., at 2908-12 Elliott Avenue, to be carried out by day labor.

The Missouri Power & Light Co., Boonville, Mo., is planning the construction of an automatic power substation near the generating plant of the Mississippi River Power Co., Keokuk, Iowa, to cost in excess of \$100,000 with equipment. A transmission line will be built.

The Kansas City Power & Light Co., Glasgow, Mo., has arranged for a bond issue of \$2,000,000, a portion of the proceeds to be used for extensions in power plants and system. Joseph F. Porter is president.

The American Silica Co., Rogers, Ark., Charles Baldwin, president, recently formed, has acquired more than 100 acres and plans the installation of machinery for development and raw silica production.

## Chicago

CHICAGO, Feb. 9.

**M**ACHINE tool buying is in the smallest volume since last fall, but the persistence of numerous inquiries continues to buoy up the hopes of the trade. No definite word has yet been received as to when the long-expected railroad lists will actually be issued. It is thought, however, that the Santa Fe and Illinois Central will be the first to put out inquiries and they may be closely followed by the Burlington and the Chicago & North Western.

The Ramapo-Ajax Corporation, Chicago, has placed orders for three frog and switch planers, one each for its Chicago, St. Louis and Niagara Falls plants. The Buda Co., Harvey, Ill., has ordered a Heim centerless grinding machine. The A. Y. McDonald Mfg. Co., Dubuque, Iowa, is in the market for one or two small speed lathes, second hand or rebuilt, 12-in. x 4 1/2-ft., belt-driven with counter shaft, and a used or rebuilt 12-in. double head key lathe to make keys for cocks up to 1 in.

The Elgin Wind Power & Pump Co., Elgin, Ill., contemplates the erection of a three-story addition. The company, besides manufacturing wind mills and steel towers, has expanded into the production of galvanized iron and steel fence posts and light structural material.

J. R. Cannon has purchased the welding shop of Emery Donley at 2019 Prairie Avenue, Mattoon, Ill. It will be remodeled.

C. A. Palmgren, 542 West Washington Boulevard, Chicago, will erect a one-story factory for the manufacture of tools, 75 x 110 ft., at 8389-93 South Chicago Avenue to cost \$25,000.

William George, 3942 Augusta Street, Chicago, has awarded contract for a one-story factory, 100 x 150 ft., to manufacture weather strips at 1146-54 West Austin Avenue, Chicago, to cost \$38,000.

The Onsrud Machine Works, 3910 Palmer Street, Chicago, has awarded contract for a one-story factory, 75 x 125 ft., at 3900-06 Palmer Street to cost \$16,000.

The foundry of the Wells H. Press Co., manufacturer of washing machines, Streator, Ill., was damaged by fire Jan. 29.

The Humbolt Cabinet Co., 4524 Fullerton Avenue, Chicago will soon ask bids for a two-story and basement addition, 30 x 130 ft., to cost approximately \$45,000. G. Pearson, 1930 North Keystone Avenue, is architect. C. Hartman is president.

The Sanitary District of Elgin, Spurling Block, Elgin, Ill., is asking bids until March 2 for equipment for sewage pumping stations, including electric-operated centrifugal pumps, motors, switchboards, starting equipment, and complete accessories. Pearce, Greeley & Hansen, 6 North Michigan Avenue, Chicago, are consulting engineers.

The Northwestern Sash & Door Co., Fergus Falls, Minn., has preliminary plans for a one and two-story factory to cost \$55,000 with equipment. Bids will be asked in about 60 days. Syvert Edlund is secretary.

The Otter Tail Power Co., Fergus Falls, Minn., is planning to begin work in the spring on its proposed power dam and hydroelectric generating plant, Friberg district, to cost in excess of \$200,000 with machinery. F. G. Barrows is secretary.

The Common Council, Two Harbors, Minn., is considering the installation of additional equipment at the municipal electric light and power plant and expects to ask bids early in the spring.



The Board of Education, District 145, Library Building, Freeport, Ill., plans the installation of manual training equipment in the three-story and basement community high school on West Moseley Street to cost \$500,000, for which bids are being asked on a general contract until March 17. Royer, Danely & Smith, Flatiron Building, Urbana, Ill., are architects.

The Bureau of Reclamation, Department of the Interior, Denver, Colo., is asking bids until March 2 for two hydraulic turbines, 750-1100 hp.; two 1000 kva. electric generators; four 667 kva. transformers; switching apparatus, lightning arresters and auxiliary equipment for the proposed hydro-electric power development at Siphon Drop, Yuma project, Arizona-California.

The Common Council, Carthage, Ill., will ask bids in March for pumping machinery, steel water tank and tower, and accessory equipment for the municipal waterworks estimated to cost \$150,000. The Caldwell Engineering Co., Ayers Bank Building, Jacksonville, Ill., is engineer.

Harry Hurd, 701 Eighth Street, Sioux Falls, S. D., and associates have awarded a general contract to the Sioux Falls Construction Co., Boyce-Greeley Building, for a two-story automobile service, repair and garage building, 130 x 150 ft., to cost \$80,000 including equipment.

## New England

Boston, Feb. 9.

**M**ACHINE-TOOL sales continue at a minimum, a large number of houses having done absolutely nothing the past week. It is felt, however, that the time is nearer when business will improve. This optimism is based on the fact that several purchasing agents who have been negotiating for machine tools, have asked those higher up to make appropriations for needed equipment. New England machine-tool builders in general report business quiet.

One of the largest Hartford makers is working on an order for 36 lathes, 24 profilers and a considerable amount of other equipment purchased by German interests for a gun making plant to be erected in Russia. It is said to be the largest export order placed in this country for some time. A Massachusetts maker of grinding machinery and a Bridgeport firm are busy on orders previously placed, but the ratio of operation to capacity of other New England machine tool builders is comparatively small.

Work has been started on a six-story, 40 x 40 ft. addition for the Corbin Screw Corporation, New Britain, Conn. Plans are private. The Aberthaw Construction Co., Boston, has the general contract.

Lockwood, Green & Co., 24 Federal Street, Boston, engineers are taking bids on a four-story and basement, 50 x 95 ft. manufacturing plant for the General Radio Co., 11 Windsor Street, Cambridge, Mass.

Foundations are going in for a one-story, 30 x 60 ft. addition by the William H. Fields Co., 232 Dorchester Avenue, Boston, woodworking machinery. Monks & Johnson, 99 Chauncy Street, Boston, are the engineers.

Ashton, Huntress & Alter 477 Essex Street, Lawrence, Mass., architects have been selected to draw plans for a \$350,000 three-story elementary school contemplated by the city of Lawrence. Walter Rochefor is mayor.

Motors, belting and miscellaneous equipment are required for a two and three-story, 34 x 63 ft. addition for E. F. Kemp, Skelton Avenue, Somerville, Mass., salted nuts, plans for which are in progress. William Sidebottom, 101 Tremont Street, Boston is the architect.

Fire, Feb. 5, destroyed a portion of the plant, including power house, of the Arlington-Belmont Ice Co., Arlington, Mass., with loss reported at \$50,000 including building and equipment.

S. S. Eisenberg, 46 Cornhill Street, Boston, architect, has plans for a two-story automobile service, garage and repair building, 80 x 100 ft., to cost \$105,000 with equipment.

The Locke Steel Chain Co., 1085 Connecticut Avenue, Bridgeport, Conn., has plans for a one-story addition, 83 x 156 ft. for which bids will soon be asked on a general contract. C. W. Walker, Jr., Bridgeport, is architect.

The Bureau of Supplies and Accounts, Navy Department, Washington, is taking bids until Feb. 17 for 2500 lb. of sheet brass for the Portsmouth Navy Yard, schedule 3300.

The Department of Education, City Hall, New Haven, Conn., is said to be planning the early purchase of machine tools and other equipment for the manual training department at the Carlisle Street school.

The Waterbury Fastener Co., Manhan Street, Waterbury, Conn., manufacturer of metal specialties, has awarded a general contract to J. F. Buttner, 227 Willow Street, and the George S. Chatfield Co., 133 Division Street, for a one-story addition, 45 x 78 ft.

Mulhall & Holmes, 33 Newbury Street, Boston, architects, will soon take bids for a four-story automobile service, repair and garage building at 18-20 Deerfield Street, to cost about \$225,000, with equipment.

The United Illuminating Co., New Haven, Conn., has awarded a general contract to the Foundation Co., New York, for an addition to its steam-operated electric generating plant on Grand Avenue, to include alterations and improvements in the existing station.

## Buffalo

BUFFALO, Feb. 9.

**T**HE New York Central Railroad will buy \$50,000 to \$75,000 worth of equipment for its West Albany car shops. The Stromberg-Carlson Telephone Mfg. Co., Rochester, maker of radio apparatus, is equipping a new woodworking shop. The Lycoming Motors Corporation, Williamsport, Pa., within a few months will purchase a small list of tools. The Prosperity Co., Inc., Syracuse, and the Willys-Morrow Co., Elmira, are among other companies buying a few tools.

Contract has been let by the Delaware, Lackawanna & Western Railroad Co., 90 West Street, New York, for its one-story car repair shop, 105 x 690 ft., at the East Buffalo yards, estimated to cost \$400,000.

The Pennzoil Co., Inc., 153 Pearl Street, Buffalo, has awarded a general contract to the Hydro Construction Co., Mutual Life Building, for a one-story oil storage and distributing plant, 50 x 150 ft., with service, repair and garage building, to cost about \$60,000. It will replace a works destroyed by fire several months ago. Hudson & Hudson, Dun Building, are architects. A. S. Matthews is general manager.

The Chamber of Commerce, Gouverneur, N. Y., is arranging for a municipal electric light and power plant to cost about \$100,000, which has been held in abeyance since the approval of a bond issue in the fall of 1923.

The Pratt & Letchworth Co., 139 Tonawanda Street, Buffalo, manufacturer of malleable iron and steel castings, has filed plans for a one-story addition to be equipped as a finishing works to cost \$40,000.

The Utica Gas & Electric Co., Utica, N. Y., is considering the construction of a new electric power plant at Schuylar, N. Y., to cost in excess of \$150,000.

The Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y., has acquired a site for a new plant, for which it is said plans will be drawn in the near future. E. M. Hanrahan is one of the heads of the company.

The M. S. Cotton Mfg. Co., Bath, N. Y., manufacturer of turned woodworking equipment, is in the market for electrically operated woodworking machinery, transmission, conveying and power equipment. Miller S. Cotton heads the company.

## Detroit

DETROIT, Feb. 9.

**T**HE Pere Marquette Railway Co., Detroit, is arranging an expansion program for the year to cost about \$3,500,000. The work will include the installation of additional equipment at the repair shops at St. Thomas and Wyoming, Mich., to cost \$50,000 and \$26,000 respectively; new coaling station at Ludington, Mich., \$50,000; coaling station at Sarnia, Mich., \$10,000; water-treating plant at Wyoming, \$17,000; water supply plant at Baldwin, Mich., \$12,000; automatic stokers, \$41,000; syphon installation on locomotives and other engine equipment, \$31,000; signals and interlocking devices, \$155,000; and new interlocking plant at Carleton, \$32,000.

The Sauer Cooperage Co., 2828-26 Benson Street, Detroit, manufacturer of tanks, etc., has preliminary negotiations under way with the Board of Commerce, Wyandotte, Mich., for a site for a proposed new plant.

The Electric Tamper & Equipment Co., Chicago, will establish a branch plant at Ludington, Mich., for assembling, experimental and parts work. Cornwall Jackson is general manager.

C. N. Agree, Book Building, Detroit, architect, has completed plans for a two-story and basement automobile service, repair and garage building, 120 x 125 ft., to cost \$175,000.

The Kelvinator Corporation, 2051 West Fort Street, Detroit, has been organized under State laws with capital of 400,000 shares of stock, no par value, to take over and consolidate the company of the same name, manufacturer of electrical refrigerators, and the Detroit Carrier & Mfg. Co.,

manufacturer of metal stampings, etc. The new company plans increase in production and to carry out the merger and proposed expansion has arranged for a stock issue of \$800,000. A. H. Goss is president.

The Miller Rubber Co., 43 Parsons Street, Detroit, is planning for a three-story addition to cost \$115,000 with machinery. Jacob Pfeiffer is president.

The Board of Directors, Kalamazoo State Hospital, Kalamazoo, Mich., has plans for a new one-story power house to cost approximately \$110,000 with equipment.

Bids will soon be asked by the Flint Malleable Casting Co., Dayton Building, Flint, Mich., for its proposed one-story foundry, for which revised plans are in progress. It will be 140 x 380 ft., and will cost \$60,000. Wright & Nice, 4338 South Saginaw Street, are architects.

The Kalamazoo Stove Co., Kalamazoo, Mich., has awarded a contract for a new building to cost approximately \$20,000.

The Plymouth Tube Co., 1435 Franklin Street, Detroit, is in the market for a second-hand 8- or 12-roll straightening machine for tubing,  $\frac{1}{4}$  x  $\frac{3}{4}$  in.

## Milwaukee

MILWAUKEE, Feb. 9.

**N**EW enterprises which furnish the machine tool trade with prospects for more active business are again being established. Current demand, however, remains largely of a replacement character, with the exception of the continued buying by the Nash interests for its Kenosha and Milwaukee plants and the new Ajax factory at Racine.

The Modern Grinder Mfg. Co., 64-70 Reed Street, Milwaukee, sustained almost a total loss of its plant by fire on Feb. 5. It occupied leased quarters in the Lindsay Brothers Co. industrial group and manufactures tool grinders, grinding wheels and similar specialties. Plans are being made for the reestablishment of the business elsewhere, but details will not be available until after adjustment of the loss is completed. The damage to building and machinery is estimated at \$150,000. Ely Bockshe is president and general manager.

The Federal Foundry Supply Co., Cleveland, has made public plans for enlarging the scope of the Milwaukee branch at 199 Oregon Street, to embrace production operations as well as distribution. Frank J. Ross, formerly of Cleveland, has assumed charge of the Milwaukee branch, succeeding the late C. A. Collins. More definite details of the plans are forthcoming, it is stated.

The Bucyrus Co., South Milwaukee, Wis., manufacturer of excavating machinery, railroad cranes, etc., has placed contracts for a new core room of brick and steel, as a continuation of its general plant replacement and enlargement program. Similar work also is being done at the branch works at Evansville, Ind. Extensive equipment requirements are included in the project. W. W. Coleman is president and general manager.

The McCord Spring Wheel Co., Milwaukee, has been incorporated in Wisconsin with an authorized capitalization of \$400,000, to build a new plant for the production of resilient steel wheels with solid tires for heavy duty vehicles. The principals are Jacob B. Reik, J. C. McFadden and Fred V. Janssen, 180 Twenty-second Street. The product is now being manufactured under contract in Chicago, and Muskegon, Mich., but the new organization will undertake its complete manufacture, along with a number of other automotive equipment specialties.

The A. C. Electric Co., 222 Fourth Street, Milwaukee, engaged in manufacturing and servicing of electrical equipment, as well as contracting, has let the general contract to Klug & Smith, engineers, 65 Wisconsin Street, for a new shop and office building costing about \$45,000, at 718-720 Winnebago Street. It will be ready by June 1. H. H. Schermerhorn is president.

The Kwik-Mix Concrete Mixer Co., Twenty-sixth and Cleveland Avenues, Milwaukee, has completed a new manufacturing building, 60 x 120 ft., at Port Washington, Wis., where production has been carried on for a number of years. The capacity has been increased to five large power mixers a day. The smaller types will, for the present, be continued in production at a branch plant, including a foundry, in Fredonia, Wis., where all castings are being made. The next unit to be built at Port Washington will be a gray iron shop, but this will not be done immediately. John Gilson is general manager.

The Super-Steel Products Co., Wauwatosa, suburb of Milwaukee, has been incorporated with \$50,000 capital stock to manufacture a general line of sheet metal goods, principally building materials and supplies. The incorporators are Erwin E. Belau, Charles Wamser and Walter A. Belau, who have been associated with the Biersach & Niedermeyer Co.

for a number of years. The new concern is establishing a shop in Wauwatosa.

The Green Bay, Wis., Board of Vocational Education expects to call for bids shortly for the construction of the proposed new vocational institute at Broadway and Howard Street, to cost \$200,000 or more. Plans are by Foeller, Schoeber & Stephenson, local architects. Equipment purchases will not be made for several months.

Harry E. Weber, Inc., 582-584 Jefferson Street, Milwaukee, let the general contract to Gustave Kahn, contracting engineer, 141 Wisconsin Street, for the construction of a building, 56 x 121 ft., one and two stories and basement, at Van Buren and Martin Streets. It will be used as a sales and service station for Stewart-Warner automotive equipment and general technical service. The architects are Van Ryn & DeGelle, 114 Grand Avenue. The total investment will be about \$85,000.

The Fond du Lac, Wis., Board of Education probably will accept the low bid of \$166,700 entered by Bartleson & Ness, Green Bay, Wis., for the general construction of an addition to the Roosevelt Junior High, and the low bid of \$185,600 by G. Schwartz & Co., Rochester, Minn., for an addition to the Central High School. The total cost will be in excess of \$500,000, including vocational training equipment to be purchased later. The architects are Perkins, Fellows & Hamilton, 814 Tower Court, Chicago.

The Marshfield, Wis., Hardware & Auto Co. will close bids Feb. 12 for the construction of its new automotive building, 68 x 100 ft., part two stories and basement, including a showroom, service floor and machine and repair shop. The architect is G. A. Krasin. Louis Trossen is secretary.

## Cincinnati

CINCINNATI, Feb. 9.

**T**HE market is spotty. Activity has fallen off somewhat since the first weeks in January, but the latter part of last week there was a slight revival in orders. Large buyers are absent from the market. The Ramapo-Ajax Corporation bought two large frog and switch planers, the Maxwell Motor Corporation, several tools, including two shapers, the Mosler Safe Co., several grinders. Of interest is an inquiry from the Russian Government for a large number of tools. Part, at least, of this business has been offered to a local manufacturer, and when terms of payment are arranged the order will be filled.

So far as reported, the Louisville & Nashville Railroad has not closed on its list, and the American Rolling Mill Co.'s list for Ashland is also in abeyance. Prospective purchasers include the Wheeling Steel Corporation, the Baltimore & Ohio Railroad, the Wabash and several manufacturing plants on the Pacific Coast. The Delco Light Co., Dayton, has issued a small list on which early action is expected, and a Huntington, W. Va., manufacturer is inquiring for two heavy machines of special design.

The White Motor Co., Cleveland, has awarded contract for the erection of a sales and service building at Cincinnati, containing 20,000 sq. ft. of floor space. It is the intention of the company to install machinery to take care of repairs on both cars and motor trucks.

The Air Friction Carburetor Co., Dayton, Ohio, manufacturer of carburetors and other automobile accessories, which recently purchased the plant of the Meeker Mfg. Co., has plans for an addition to cost \$75,000. Bids for erection will be called later in the year and the new plant is expected to be ready for occupancy in 1926. J. W. Raymond is president and general manager.

The Maxwell Motor Corporation has placed its body building plant at Third and Bainbridge Streets, Dayton, Ohio, on the market, the proceeds to be applied to erecting two new buildings adjoining the Leo Street plant in North Dayton.

The Buckeye Iron & Brass Works, Dayton, has converted its grey iron foundry into a brass foundry and will specialize in the production of brass whistles, gages, steam fitters' supplies and other brass products. New equipment is being added.

The Variety Mfg. Co., Dayton, recently incorporated, will engage in the general manufacture of metal products. It has purchased the plant of the Dimler Mfg. Co., 2903 West Third Street, and plans to occupy it immediately. J. C. De Beucheleare is president.

The Meteor Motor Car Co., Piqua, Ohio, has plans for an addition, 60 x 600 ft., to be occupied by the paint, trimming, chassis and final assembly departments.



The Hart & Crouse Co., Poplar and Henry Streets, Columbus, Ohio, has awarded a general contract to C. R. Clouse, 345 Torrence Road, for a one-story addition, 60 x 140 ft., for metal and tin-working, to cost \$22,000. Charles L. Insche, Brunson Building, is architect.

The Board of Education, Piketon, Ohio, is considering the installation of manual training equipment in its proposed two-story and basement high school, estimated to cost \$130,000. Fred J. Porter, 1934 Summit Street, Columbus, Ohio, is architect.

The Dixie Portland Cement Co., Richard City, Tenn., is said to have preliminary plans for extensions and improvements estimated to cost \$200,000, including additional equipment. Headquarters are in the James Building, Chattanooga, Tenn. Richard Hardy is president.

The Louisville & Nashville Railroad Co., Louisville, has awarded a general contract to the W. Horace Williams Co., 3318 Coliseum Avenue, New Orleans, for a new engine house and machine shop at Gentilly, near New Orleans, in connection with other structures. The entire project will cost \$500,000 with equipment. W. H. Courtenay is chief engineer.

The Williams & Voris Lumber Co., Chattanooga, Tenn., is planning a one-story addition at its hardwood mill to cost \$60,000, with equipment.

The Ralston Steel Car Co., East Columbus, Ohio, is having plans drawn for a one-story addition to cost approximately \$50,000. Bruns & Watson, 1083 South High Street, Columbus, Ohio are engineers.

Alexander M. Robinson, Georgetown, Ky., machinery dealer, has inquiries out for an electric generator, 150 to 200 kva. capacity, direct-connected to oil engine.

Biederman & Eaton, Ashland, Ky., have purchased property on East Winchester Avenue and will have plans drawn for a three-story automobile service, repair and garage building to cost \$85,000. William P. Eaton is manager.

The Mississippi River Commission, 1006 McCall Building, Memphis, Tenn., will take bids until March 2 for 1,088,000 lb. galvanized wire rope and wire; 20,000 ft. fiber clad rope, and 40,000 wire rope clips, circular 64.

## Cleveland

CLEVELAND, Feb. 9.

THE volume of machine tool business is light, sales the past week scarcely holding up to the previous week. Orders were largely in single tools and there were few, if any, for more than two machines. Presses and other sheet metal-working machinery continue to move in moderate volume. Demand for used machinery is fairly active. Machine-tool manufacturers have considerable business in prospect but find buyers slow in placing orders. The demand from the automotive industry continues light and shows no signs of an early revival.

The Columbian Hardware Co., Cleveland, will discontinue its forging business and devote its entire attention to the manufacture of its line of vises and other hardware products. It has arranged with a local machinery house for the disposal of its forge shop equipment, which includes about 15 board drop and steam drop hammers, a number of trimming presses and its tool room equipment, consisting of planers, shapers, lathes, etc.

The Austin Co., Cleveland, has taken contract for a one-story addition to the plant of the Kropp Forge Co., Cicero, Ill., and a contract from the Salem Laundry Co., Salem, Ore., for a laundry building.

The Cleveland Electric Illuminating Co. is completing plans for its new electric power plant at Avon, Ohio. The first unit will have a capacity of 90,000 hp. and will be equipped with two 40,000-hp. turbo generators and four 10,000-hp. boilers. Other requirements will include coal and ash handling and pulverized coal equipment, electric traveling crane, conveyors, pumps, etc. E. J. Cook, Illuminating Building, Cleveland, is the company's engineer.

The Modern Pattern Co., Canton Avenue, Toledo, Ohio, manufacturer of wood and metal patterns, has taken bids for a one-story addition, 30 x 60 ft. for the lathe and wood-turning departments.

The Cleveland Electric Illuminating Co. has taken bids for the super-structure of a new substation at Bolivar Road and East Eighth Street.

The Bostwick & Goodell Co., Norwalk, Ohio, manufacturer of metal screens, has placed contract for a one-story factory, 85 x 300 ft.

A manual training department and metal-working shop will be provided in the Garfield high school, Akron, Ohio, for which plans are being prepared. Mrs. Irene Moses is clerk of the Board of Education.

The city of Steubenville, Ohio, is having plans prepared for a \$400,000 grade and junior high school which will include a manual training department. Roy McClane is secretary of the Board of Education.

The Building Products Co., Toledo, Ohio, is in the market for galvanized sheets 36 in. wide and 34, 37½, 41½ and 45½ in. long.

Plans have been completed by the engineering department of the Mack Iron & Wire Works Co., Sandusky, Ohio, manufacturer of iron stairways and steel products, for the erection of a one-story addition, 52 x 120 ft. Equipment will be required. Edward J. Buder is assistant company engineer in charge of operations. John D. Mack is president.

## Pittsburgh

PITTSBURGH, Feb. 9.

IF machine-tool sales were as numerous as inquiries, the local trade would have all the business it could handle. Orders, however, are much less numerous than requests for prices. With most dealers business is quieter than it has been and buyers are more disposed to defer purchases. The Westinghouse Electric & Mfg. Co. is placing one or two tools from time to time against its quarterly list and the Carnegie Steel Co. recently placed two motor-driven shears, one for blooms and one for beams, for its Homestead works, with the United Engineering & Foundry Co.

Prospective demand for rolling mill equipment appears good. The only sale, however, was the 25-42-in. 3-high universal plate mill placed by the Gary Tube Co. There are hopes of action this week on the three new sheet mills of the Sharon Steel Hoop Co., at Youngstown, and the Youngstown Sheet & Tube Co. is expected to do some buying soon for its new sheet and tin plate units projected for Indiana Harbor, Ind. The Edgewater Steel Co., Pittsburgh, is inquiring for a used 4-ft. radial drill with taper attachment.

Plans are being considered by the National Metal Products Co., Chateau and Fayette Streets, Pittsburgh, for the erection of a new building, work to begin during the summer.

The Consolidated Fuel Co., Chamber of Commerce Building, Pittsburgh, affiliated with the Bertha-Consumers Co., same address, has plans for the construction of a new steel tipple at its properties at Powhatan, Ohio, to cost \$175,000 with equipment. Mining equipment will also be installed.

George W. Gerwig, secretary Board of Public Education, 1308 Fulton Building, Pittsburgh, is taking bids until Feb. 19 for boilers, stokers, motors, mechanical fans, temperature regulating apparatus, etc., for installation in the addition to the Perry high school, Perryville Avenue and Hemphill Street, for which bids are being asked on a general contract.

The Blue Ridge Coal Corporation, P. O. Box 1538, Charleston, W. Va., is planning the installation of equipment on local property to develop an output of 1000 tons per day, later to be advanced to 3000 tons daily, including tipple machinery, cutting machines, hoisting apparatus, haulage locomotives, etc. J. J. Ross is in charge.

The Diamond Alkali Co., First National Bank Building, Pittsburgh, is said to be contemplating the installation of a traveling crane at its plant at Painesville, Ohio.

The Pioneer Motor Co., Dormont, Pa., has plans for a two-story service, repair and garage building to cost \$45,000. T. R. Eicholz, 413 Fourth Avenue, Pittsburgh, is architect.

The United States Engineer, Pittsburgh, will take bids until Feb. 27, for the construction of one steel derrick boat hull, circular 244.

The Clarksburg Sheet Glass Co., Clarksburg, W. Va., has been formed with a capital of \$1,000,000 to take over and consolidate the Clarksburg Glass Co., Adamston Street and the American Sheet Glass Co., North Twenty-fifth Street. Plans are under consideration for extensions and improvements. W. M. B. Sine is president.

## Indiana

INDIANAPOLIS, Feb. 9.

PLANS are being considered by the Hillenbrand Furniture Co., Batesville, Ind., for an addition to cost \$50,000 with equipment. Work will begin late in the spring.

The General Piston Ring Co., 701 Sand Street, Indianapolis, is planning for enlargements in its branch factory at Tipton, Ind., where a building has been selected. A portion of the present Indianapolis works will be removed to the new

location and additional equipment installed. A. L. Teetor is president.

The Sutton Welding Products Co., 32 South Senate Avenue, Indianapolis, is arranging for the removal of its plant to larger quarters at 319 West Maryland Street, where the capacity will be increased.

The D. J. Dalton Foundry Co., Warsaw, Ind., manufacturer of grey iron castings, has awarded a general contract to Merle P. Hodges, East Market Street, for a one-story addition, 80 x 200 ft., estimated to cost \$55,000.

The Board of Education, Wabash, Ind., plans the installation of manual training equipment in the new four-building high school group soon to be erected, estimated to cost \$300,000. J. Edwin Kopf and Wooling, Indiana Pythian Building, Indianapolis, are architects.

Premier Motors, Inc., Indianapolis, manufacturer of taxicabs and commercial vehicles, is arranging for increase in daily output. It recently arranged for an increase in capital from \$100,000 to \$2,100,000. Frederic Barrows is president.

The Showers Brothers Furniture Co., Bloomington, Ind., has awarded a general contract to the H. K. Ferguson Co., Euclid Avenue, Cleveland, Ohio, for a one-story addition, 60 x 140 ft., to be used as a chair factory, and one-story boiler plant.

The P. & B. Foundry Co., Indianapolis, has leased a building at 424 South Pennsylvania Street, and will remodel for the production of iron and other metal castings.

Armour & Co., Union Stock Yards, Chicago, meat packers, are said to be planning to rebuild their branch packing plant at Worthington, Ind., partially destroyed by fire, Feb. 2, with loss of \$225,000, including refrigerating, conveying and other equipment.

The Federal Motor Truck Co., Detroit, has established a new factory branch at 933 North Capitol Avenue, Indianapolis, with repair and parts divisions, etc. F. A. Beasley will be branch manager.

## South Atlantic States

BALTIMORE, Feb. 9.

**M**OTORS, ovens, power equipment, conveying and other machinery will be installed in the proposed plant now under consideration by the General Baking Co., 342 Madison Avenue, New York, at North and Harford Streets, Baltimore, estimated to cost \$500,000.

The Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until Feb. 17 for hull steel rivets, schedule 3244; copper tubes and tubing, schedule 3299; boiler tube brushes, schedule 3251; 4200 lb. rolled brass, schedule 3262; 220 lb. bare resistance wire, schedule 3264, and until Feb. 24, for pipe, valves, etc., schedule 3268.

The Crystal Ice Co., 42 Lee Street, Atlanta, Ga., is arranging for the erection of a one-story addition to cost about \$50,000 with machinery.

The R. S. Armstrong & Brother Co., Atlanta, Ga., machinery dealer, has inquiries out for a high pressure 200-hp. horizontal return tubular boiler, with accessories.

The Athens Foundry & Machine Works, Athens, Ga., has inquiries out for a single or double air compressor, with belt drive, to carry about 80 lb. of air.

The South Carolina Power & Light Co., Kingstree, S. C., is contemplating extensions in the municipal electric light and power plant at Lake City, S. C., recently acquired, including the installation of additional equipment.

The Oxford Buggy Co., Oxford, N. C., is in the market for small metal wheels, with rubber tires, for go-carts and toy wagons, and is desirous of getting in touch with manufacturers.

The Corriker Mills Co., Landis, N. C., is planning the installation of an electric light and power house at its textile mills, in connection with other extensions. George C. Bell, Piedmont Building, Charlotte, N. C., is architect and engineer.

The Asheville Supply & Foundry Co., Asheville, N. C., has authorized plans for a one-story steel fabricating works, 100 x 200 ft., on property recently acquired in the Biltmore section. R. D. Hildebrand is president. The company is now operating a foundry at Market and Eagle Streets.

S. C. Colquitt, Geneva, Ga., is in the market for a 40-hp. engine, 50-hp. boiler and accessory equipment.

The Board of Education, Hendersonville, N. C., is planning for the installation of manual training equipment in its proposed three-story high and grade school, estimated to cost \$250,000. E. G. Stillwell, Hendersonville, is architect.

James P. Brown, State warehouse superintendent, Raleigh, N. C., will purchase a quantity of metal tags, suitable to affixing to ties on cotton bales, etc., and is desirous of getting in touch with manufacturers.

The Public Works Department, Winston-Salem, N. C., is planning the construction of an automobile service, repair and garage building for city trucks and cars, estimated to cost \$50,000.

The North Carolina Public Service Co., Greensboro, N. C., has acquired about three acres and has plans under consideration for an automatic power substation, estimated to cost \$50,000 with equipment.

The United States Engineer, Wilmington, N. C., will receive bids until March 12, for the construction of one steel barge, 80 ft. long, 26 ft. wide and 5 ft. deep.

Lewter F. Hobbs, Inc., Monticello Avenue, Norfolk, Va., has inquiries out for two gasoline locomotives, each 2 to 4 tons capacity, 24 in. gage.

The Ford Motor Co., Highland Park, Detroit, is expected to soon ask bids for the construction of a second unit at its plant on the Elizabeth River, Norfolk, Va., to cost close to \$1,000,000.

The Lingo Metal Works, Wilmington, N. C., is planning to purchase machinery for the manufacture of lock-joint stove pipe and kindred products.

The office of the chief of air service, United States Army, Washington, is asking bids until Feb. 17 for 100 vertical drive shafts, 200 vertical drive shaft gears, 200 vertical shaft gear cones, 900 wrist pin bolts, 5000 shims, and 1800 nuts, circular Q. R. 84.

R. E. Evans, R. F. D. No. 3, Chesterfield, S. C., is planning to purchase a 25-hp. turbine waterwheel and accessory equipment, for installation in a local power station.

Barton H. Cameron, Gordonsville, Va., is in the market for a second-hand steel tank of about 5000 gal. capacity for storing fuel oil.

The Georgia Marble Co., Tate, Ga., is inquiring for an eight-wheel locomotive crane, 20 to 30 tons capacity, also for a direct motor driven air compressor, capacity about 3000 cu. ft.

J. A. Dougherty, LaGrange, N. C., a manufacturer of agricultural implements, is in the market for iron foundry equipment for a one-story building under construction.

## Gulf States

BIRMINGHAM, Feb. 9.

**I**N connection with a proposed cotton mill to be erected in the vicinity of Waco or Dallas, Tex., the C. R. Miller Mfg. Co., Waco, plans for the construction of a power house. The entire plant will cost approximately \$1,000,000. C. R. Miller is president.

The Davis Pipe & Fitting Co., 830 North Forty-sixth Street, Birmingham, is said to have concluded negotiations for the purchase of the plant and business of the Iron City Pipe & Foundry Co., 400 North Thirty-fourth Street, North Birmingham, for expansion. Benjamin Davis is president of the purchasing company.

The District Engineer, United States Army, Florence, Ala., will soon take bids for a high-tension transformer and switching substation, to cost \$100,000 with machinery.

The Alabama Clay Products Co., Bessemer, Ala., will make extensions and improvements in its power plant with the installation of two 72-in. diameter, and 18 ft. long, horizontal return tubular boilers, and auxiliary equipment. L. R. Camp, P. O. Box 529, Birmingham, is consulting engineer, and will take estimates and award contracts for equipment.

The Speer-Harris Lumber Co., Tallahassee, Fla., is planning the purchase of a horizontal return tubular boiler, 72-in. diameter and 18 ft. long, with accessory equipment.

The Magnolia Petroleum Co., Dallas, Tex., operating a refinery at Beaumont, Tex., is disposing of a bond issue of \$15,000,000, a portion of the fund to be used for expansion and betterments. John Sealy is chairman of the board.

The Shreveport Gas & Electric Co., Shreveport, La., will soon begin the construction of a new power plant to cost in excess of \$250,000 with equipment.

The Eco-Thermal Stove Co., Lebanon, Ohio, is said to be planning the establishment of a new assembling plant in the vicinity of Shreveport, La., to cost \$75,000. John A. Blair is treasurer.

The Middle West Utilities Co., 72 West Adams Street, Chicago, contemplates rebuilding the portion of its ice-manufacturing plant at San Angelo, Tex., to cost \$75,000 with equipment.

Walker B. Spencer, 321 St. Charles Street, New Orleans, recently organized, is said to have plans for a six-story automobile service, repair and garage building, to cost \$400,000 with equipment. Robert E. Loeb, Hibernia Bank Building, is also interested in the organization. The W. Horace Williams Co., Inc., 816 Howard Avenue, is architect.



The Dallas Power & Light Co., Dallas, Tex., has taken out a permit to build a one-story power substation at Kelly and Sealy Streets, South Dallas, to cost \$249,000. It is also planning the construction of a similar substation in a different section of the city.

The Gulf Coast Contracting Co., 2315 Kane Street, Houston, Tex., is planning to purchase stone-crushing equipment, including a power jaw crusher, elevator, conveyor, etc.

The Baldwin County Electric Light & Power Co., Bay Minette, Ala., has preliminary plans for a steam-operated electric power house in Baldwin County. A transmission line will be built.

The Board of Education, Fort Worth, Tex., has asked bids on a general contract for the construction of a one-story vocational school on the grounds at the Sam Houston school. W. M. Short is president of the board.

The West Texas Electric Co., Colorado, Tex., is completing plans for a one-story and basement ice-manufacturing and cold storage plant, estimated to cost \$80,000 with equipment.

The Baer & Thayer Hardwood Co., Inc., Bogalusa, La., has inquiries out for a double drum engine and boiler, and one geared locomotive, capacity 30 to 40 tons.

The Texas Supply Co., 2016 Lorraine Street, Houston, Tex., is in the market for 100 miles of 6- or 8-in. standard line pipe.

## Pacific Coast

SAN FRANCISCO, Feb. 4.

**A**n expansion program for the year is being arranged by the Los Angeles Gas & Electric Corporation, Los Angeles, to cost in excess of \$5,000,000. The work will include extensions and power plants, new automatic power substations, and line extensions, as well as new machine shop, automobile service and repair building for company trucks and other structures. In the gas department the company plans the installation of compressors and other machinery to cost \$1,340,000.

The Salinas Valley Pipe Co., Salinas, Cal., has leased two acres at Soledad, Cal., and contemplates the construction of a new plant to manufacture concrete pipe.

The Utah-Idaho Sugar Co., Salt Lake City, Utah, will begin the construction of its new sugar mill at Bellingham, Wash., estimated to cost \$1,500,000 including machinery. It will include a power house. A portion of the equipment will be removed from an existing plant at Toppenish, Wash.

The Inland Empire Paper Co., Millwood, Wash., has awarded a general contract to the Austin Co., Dexter-Horton Building, Seattle, for the erection of a one-story machine room addition, 145 x 250 ft., estimated to cost \$135,000.

The Union Oil Co. of California, Los Angeles, has arranged for a bond issue of \$10,000,000, a portion of the proceeds to be used for extensions and improvements in refineries, pipe lines, etc. W. L. Stewart is president.

The Wilkeson Coal & Coke Co., Tacoma, Wash., is planning the construction of a new fuel briquette plant at Centralia, Wash., estimated to cost \$400,000 with machinery. E. R. Millan is company engineer.

The Phoenix Sheet Metal Works, Inc., 320 West Washington Street, Phoenix, Ariz., is arranging for a new plant on East Van Buren Street to cost \$23,000 with equipment.

The Pajaro Valley Cold Storage Co., Second and Walker Streets, Watsonville, Cal., has plans for a one-story addition, 100 x 300 ft. The installation will consist of a 50-ton ice-making machine and accessory equipment. A. E. Pellett is general manager.

The Public Service Commission, 207 South Broadway, Los Angeles, is taking bids until Feb. 20 for a Diesel-engine generating set, specification 749. James P. Vroman is secretary.

The Puget Sound Power & Light Co., Seattle, has plans for a one-story automatic power substation, with initial capacity of 2000 kw., estimated to cost \$145,000. Later the output will be increased to 12,000 kw. W. H. McGrath is vice-president.

The Central California Ice Co., Fresno, Cal., is arranging for a new ice-manufacturing plant at Delano, Cal., with an initial output of 60 tons per day. Work will begin in March.

## Canada

TORONTO, Feb. 9.

**M**ACHINE-TOOL sales show some improvement but in practically all cases the demand is for one or two machines, mostly for replacement. Second-hand tools are also more active. A good prospective demand is reported for equipment for sawmills, pulp and paper mills, mining plants and various other industries. Dealers also expect more general buying for replacement purposes from automobile manufacturers and railroads.

The Hy-Lo Jacks, Ltd., Strathroy, Ont., is having plans prepared for the erection of a factory and is asking for equipment for the manufacture of hydrostatic jacks, etc. J. Carruthers is president.

The galvanizing department of the Page-Hersey Iron & Tube Co., Guelph, Ont., was destroyed by fire with a loss of \$10,000. It will be rebuilt immediately.

The Exide Batteries of Canada, Ltd., 153 Dufferin Street, Toronto, has had plans prepared by William Steele & Sons, 31 Bloor Street East, for an addition to its factory to cost \$25,000. Considerable new machinery will be installed.

The Southern Canada Power Co., Ltd., 20 St. Nicholas Street, Montreal, is preparing plans for extension to its power development plant at Drummondville, Que.

The sash and door factory at St. Thomas de Montmagny, Que., owned by Cie Thibault Ltee, was destroyed by fire with loss to building and equipment of \$50,000. The owners will rebuild and are interested in equipment for a new factory.

The Guelph Paper Box Co., Guelph, Ont., will rebuild its factory recently destroyed by fire and will purchase equipment for the manufacture of office furniture, boxes, etc.

## Western Canada

The Foundry Products Co., Ltd., Calgary, Alta., propose to erect a new building at Ninth Avenue and Sixth Street to cost \$15,000.

The American Can Co., Ltd., 535 Railway Avenue, Vancouver, B. C., will build a four story addition to its plant 160 x 260 ft., and is interested in equipment.

## Branch Office Representatives of The Iron Age

Chicago, 1507 Otis Building.....Gilbert L. Lacher  
Pittsburgh, 1002 Park Building.....George F. Tegan  
Cleveland, 538 Guardian Building.....F. L. Prentiss  
Cincinnati, First National Bank Building.....J. E. McDonald  
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San Francisco, 220 Market Street.....W. A. Douglass

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates		Per Lb.
Bars:		
Refined iron bars, base price.....	3.24c.	
Swedish charcoal iron bars, base.....	7.00c. to 7.25c.	
Soft steel bars, base price.....	3.24c.	
Hoops, base price.....	4.49c.	
Bands, base price.....	3.99c.	
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base.....	3.34c.	
Channels, angles and tees under 3 in. x ¼ in., base.....	3.24c.	
Steel plates, ¼ in. and heavier.....	3.34c.	

Merchant Steel		Per Lb.
Tire, 1½ x ½ in. and larger.....	3.20c.	
(Smooth finish, 1 to 2½ x ¼ in. and larger).....	3.55c.	
Toe-calk, ½ x ¾ in. and larger.....	4.20c.	
Cold-rolled strip, soft and quarter hard.....	7.00c.	
Open-hearth spring steel.....	4.50c. to 7.00c.	
Shafting and Screw Stock:		
Rounds.....	4.15c.	
Square, flats and hex.....	4.65c.	
Standard tool steel, base price.....	15.00c.	
Extra tool steel.....	18.00c.	
Special tool steel.....	23.00c.	
High-speed steel, 18 per cent tungsten.....	70c.	

Sheets		Per Lb.
Blue Annealed		
No. 10.....	3.89c.	
No. 12.....	3.94c.	
No. 14.....	3.99c.	
No. 16.....	4.09c.	

Box Annealed—Black		Per Lb.
Soft Steel		
C. R. One Pass		
Per Lb.		
Nos. 18 to 20.....	4.45c. to 4.60c.	
Nos. 22 and 24.....	4.60c. to 4.75c.	5.25c.
No. 26.....	4.65c. to 4.80c.	5.30c.
No. 28*.....	4.75c. to 4.90c.	5.40c.
No. 30.....	4.85c. to 5.10c.	

Galvanized		Per Lb.
No. 14.....	4.85c. to 5.00c.	
No. 16.....	5.00c. to 5.15c.	
Nos. 18 and 20.....	5.15c. to 5.30c.	
Nos. 22 and 24.....	5.30c. to 5.45c.	
No. 26.....	5.45c. to 5.60c.	
No. 28*.....	5.75c. to 5.90c.	
No. 30.....	6.25c. to 6.40c.	

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe		Per Lb.
Standard Steel		
Black Galv.		
½ in. Butt... 46	29	
¾ in. Butt... 51	37	
1-3 in. Butt... 53	39	
2½-6 in. Lap. 48	35	
7 & 8 in. Lap. 44	17	
11&12 in. Lap. 37	12	
Wrought Iron		
Black Galv.		
½ in. Butt... 4	+19	
¾ in. Butt... 11	+9	
1-1½ in. Butt. 14	+6	
2 in. Lap.... 5	+14	
3-6 in. Lap... 11	+6	
7-12 in. Lap.. 3	+16	

Bolts and Screws	
Machine bolts, cut thread, 45 and 10 per cent off list	
Carriage bolts, cut thread,	
35 to 35 and 10 per cent off list	
Coach screws, 45 and 10 per cent off list	
Wood screws, flat head iron,	
75, 20, 10 and 5 per cent off list	

Steel Wire		Per Lb.
BASE PRICE* ON NO. 9 GAGE AND COARSER		
Bright, basic.....	4.25c. to 4.50c.	
Annealed soft.....	4.50c. to 4.75c.	
Galvanized annealed.....	5.15c. to 5.40c.	
Coppered basic.....	5.15c. to 5.40c.	
Tinned soft Bessemer.....	6.15c. to 6.40c.	

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

BASE PRICE	
High brass sheet.....	19½c. to 20½c.
High brass wire.....	20½c. to 21½c.
Brass rods.....	17½c. to 18½c.
Brass tube, brazed.....	27½c. to 28½c.
Brass tube, seamless.....	24½c. to 25½c.
Copper tube, seamless.....	25½c. to 26½c.

## Copper Sheets

Sheet copper, hot rolled, 23c. to 24c. per lb. base.  
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

## Tin Plates

Bright Tin		Coke—14 x 20		Prime	Seconds
Grade "AAA"	Grade "A"	80 lb...	\$6.15	\$5.90	
Charcoal 14x20	Charcoal 14x20	90 lb...	6.30	6.05	
		100 lb...	6.45	6.20	
IC.. \$11.25	\$8.85	IC..	6.65	6.40	
IX.. 12.85	10.85	IX..	7.85	7.60	
IXX.. 14.40	12.55	IXX..	9.00	8.75	
IXXX.. 15.75	13.85	IXXX..	10.35	10.10	
IXXXX.. 17.00	15.05	IXXXX..	11.35	11.10	

## Terne Plates

8 lb. coating, 14 x 20	
100 lb. ....	\$7.00 to \$8.00
IC .....	7.25 to 8.25
IX .....	8.25 to 8.75
Fire door stock.....	9.00 to 10.00

## Tin

Straits, pig .....	61c.
Bar .....	68c. to 70c.

## Copper

Lake ingot .....	16½c.
Electrolytic .....	16½c.
Casting .....	16 c.

## Spelter and Sheet Zinc

Western spelter .....	9¼c.
Sheet zinc, No. 9 base, casks.....	12c. open 12½c.

## Lead and Solder\*

American pig lead.....	11c. to 11½c.
Bar lead .....	15c.
Solder, ½ and ½ guaranteed .....	42c.
No. 1 solder .....	39½c.
Refined solder .....	33c.

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

Best grade, per lb.....	75c. to 90c.
Commercial grade, per lb.....	35c. to 50c.
Grade D, per lb.....	25c. to 35c.

## Antimony

Asiatic .....	20c. to 21c.
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## Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.....	36c.
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## Old Metals

The market is generally unchanged both as to prices and activity. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible.....	12.50
Copper, heavy wire.....	12.25
Copper, light bottoms.....	10.25
Brass, heavy.....	7.75
Brass, light.....	6.50
Heavy machine composition .....	9.50
No. 1 yellow brass turnings.....	8.75
No. 1 red brass or composition turnings.....	9.00
Lead, heavy.....	8.00
Lead, tea.....	6.50
Zinc .....	4.50
Cast aluminum .....	17.00
Sheet aluminum .....	17.00